



Faculty of Engineering

**A Quantitative Evaluation Method for Standard Form of Contract in
Malaysia**

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A Quantitative Evaluation Method for Standard Form of Contract in Malaysia

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DECLARATION

I, Stephenie Lau May Kei (15020861, Faculty of Engineering) hereby declare that the work entitled “A theoretical and mathematical formulation for qualitative and quantitative evaluation of engineering procurement contractual documents, specifically for Malaysian construction industry” is my original work. I have not copied from any other student’s work or from any other sources where due reference or acknowledgement is made explicitly in the text, nor has any part been written for me by another person. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

Signature : _____

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Date : _____

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ABSTRACT

The Malaysian construction industry is heavily dependent on the standard forms of contract as a general condition of contracts in which all parties involve are well versed with the structured bond and duties that the contract implies. However, according to the contracting parties' opinion, even with recent revisions, the existing standard forms are problematic, explicitly in terms of clarity, completeness and distribution of rights and obligations. Thus, this research aims to develop a theoretical and mathematical framework to evaluate the contents in a standard form of contract. This framework will then be tested using CIDB Standard Form of Contract for Building Works 2000, which is published by Construction Industry Development Board (CIDB) and used for both public and private sector construction projects. Every clauses and sentences in the contract was interpret by using a series of parameters and checklist developed from past literature. Data collected was then being analysed by using some simple mathematics formula. As a result, CIDB standard form of contract appears to be a quite clear, quite complete, and quite fair contract. This evaluation is consistent with the public's opinion in the past research, which also proved that the developed framework is working as intended. However, limitations are found during the framework validation. The results and recommendations are able to serve as a basis for future improvements in modifying the framework for standard form evaluation.

Keywords: Framework, clarity, completeness, rights and obligations, CIDB

Cara Penilaian Secara Kuantitatif untuk Borang Kontrak Seragam di Malaysia

ABSTRAK

Industri pembinaan Malaysia amat bergantung kepada penggunaan borang kontrak seragam sebagai syarat am kontrak di mana semua pihak yang terlibat memahami akan struktur perjanjian dan keperluan yang dinyatakan dalam kontrak. Walau bagaimanapun, berdasarkan pendapat pihak terlibat dalam kontrak, borang kontrak seragam edisi terkini yang sedia ada sangat bermasalah dari segi kejelasan, kesempurnaan dan pendedaran hak dan kewajipan. Oleh itu, kajian ini bertujuan untuk membuat satu rangka kerja berdasarkan teori dan matematik untuk menilai borang kontrak seragam. Rangka kerja ini akan diuji menggunakan Borang Kontrak Seragam CIDB untuk Kerja Raya 2000, yang diterbitkan oleh Lembaga Pembangunan Industri Pembinaan Malaysia (CIDB) dan digunakan dalam projek pembinaan sektor awam dan swasta. Setiap klausa dan ayat di dalam kontrak akan ditafsir dengan menggunakan siri parameter dan senarai semak yang dihasilkan dari kajian masa lalu. Data yang dikumpul kemudiannya dianalisis dengan menggunakan beberapa formula matematik. Kesimpulannya, borang kontrak seragam CIDB ialah kontrak yang agak jelas, cukup lengkap, dan adil. Penilaian ini didapati selaras dengan pendapat orang ramai dalam penyelidikan masa lalu. Ini juga membuktikan bahawa rangka kerja yang dihasilkan berfungsi seperti yang diinginkan. Walau bagaimanapun, rangka kerja ini didapati mempunyai kelemahannya semasa ujian kerangka. Hasil penyelidikan dan cadangan mampu dijadikan asas untuk pengubahan rangka kerja pada peningkatan masa depan.

Kata kunci: Rangka kerja, kejelasan, kesempurnaan, hak dan kewajipan, CIDB

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LIST OF ABBREVIATIONS

CIDB	Construction Industry Development Board
FIDIC	Federation of Consulting Engineers
IEM	Institution of Engineers Malaysia
JKR	Jabatan Kerja Raya
JCT	Joint Contracts Tribunal
NEC	New Engineering Contract
PAM	Pertubuhan Arkitek Malaysia
PWD	Public Works Department
S.O.	Superintending Officer

CHAPTER 1

INTRODUCTION

1.1 General

Civil engineering deals with the design, construction and maintenance of the physical and natural built environment. It also takes place on all levels whereby in the public sector from municipal through to federal levels, while in the private sector from individual homeowners through to international companies (Misnan, 2012). However, construction is the major area of civil engineers' expertise. The construction industry is one of the largest industry in the world and still rapidly growing especially in the Middle East and developing countries.

In the construction industry today, projects are becoming more complicated in the aspect of management and execution. According to Abidin (2007), construction is a complex process involving plenty of activities, myriads of individual, different company or firms, different size, part of country with different skills and capabilities and always subject to changing environment. In other word, a project is said to be complex when it consist many varied interrelated parts and each part can be operationalize in terms of differentiation and interdependency (Baccarini, 1996). Precisely, construction projects are immensely complex due to its involvement of several parties in the project management process from its beginning in project consultation, until the handing over of the completed project to the employer. Further detail on the construction projects are discussed in Section 2.2.

1.2 Contract

Due to the complexity of construction industry, a construction contract plays a crucial role in binding the numerous parties involved in the construction project, ensuring each party is legally bounded to their roles and responsibilities towards the completion of the project. Blum (2007) defines contract as an exchange relationship created by oral or written agreement between two or more persons, containing at least one promise, and recognized in law as enforceable. In Malaysia, such a contract is a promise or a set of promises that are enforced under the Contract Act 1950 (Whyte, 2015). Similarly, Lee (2010) mentioned that contracts are legally binding agreement between two parties and above enforces by the law of contracts. Whyte (2015) explains that a construction contract is a legally binding agreement between two or more parties, with the intention to address the (building) scope of a project via an offer by a party with the capacity to carry out the work and an acceptance by a client who needs the facility (built); alongside, a reasonable period of consideration of the obligations involved.

From the definitions as mentioned above, a contract always involves at least two parties, which generally refers to the employer and the contractor in a construction project. The employer also known as the paymaster is the one who initiates and pay for the project, while the contractor is entrusted to carry out the construction work for the employer. Other than that, Singh (2002) summarise the principle parties involved in a typical engineering construction contracts, which include employer, contractor, sub-contractor, suppliers, architect, engineer, quantity surveyor, authorities and third parties. Explanation on each parties are discussed on Section 2.3.1.

On the other hand, contract documentation is also an important tool which communicate clearly a complex array of technical and legal information defining both the

work to be accomplished and the responsibilities of the involved parties (Connell et al., 2008).

A typical contract includes document such as following (Singh, 2005):

- Agreement or Articles of agreement
- General Conditions of Contract
- Special Contracts Conditions
- Drawings and plans
- Specifications
- Bill of quantities
- Schedule of rates
- Programme or method statement
- Miscellaneous documents
- Design and build document

Definitions on each contract document is provided in Section 2.3.2. Among the construction contract documents, general conditions of contract stand an important role to defines the rights and responsibilities of every contracting parties in the project other than lay down administrative procedures to be followed during the progress of the works.

1.3 Standard Forms of Contract

Generally, standard forms of contract are used as general conditions in a contract. It is printed forms and published by an authoritative body of the industry, which body is recognized by both parties (Ting, 2013). In Malaysia, only four authority bodies of the industry published the standard forms as the general conditions of the contract where the form set out the terms and condition on which the contract between the parties are to be

carried out. These terms or conditions are deemed to be agreed and are not subject to further negotiation and/or amendment (Singh, 2004). The four authority bodies were meant to:

- The Institution of Engineers, Malaysia (IEM)
- Pertubuhan Arkitek Malaysia (PAM)
- Construction Industry Development Board (CIDB)
- Jabatan Kerja Raya (JKR)

Different types of standard form were chosen for different kind of construction project. For example, IEM Conditions of Contract for Mechanical and Electrical Works are used in private sector civil engineering works and mechanical and electrical works in Malaysia, while CIDB Standard Form of Contract for Building Works (2000 Edition) is used for building works in both public and private sector. In Malaysia, CIDB 2000, PAM 2006 and PWD Form 203(A) Standard Form of Contract are widely used to govern construction projects and manage contractual relationship between contractors and the employers (Lee & Azizan, 2012). This is because standard form of contract defines the rights, roles, responsibilities, and the whole relationship between the commercial parties as well as spelling out the general rules for running the project (Bubshait & Almohawis, 1994).

The wide use of standard forms reflects recognition of the advantages of using standardized general conditions (Singh, 2004). The use of standard forms of contract for civil engineering projects has long been standard procedure; all parties in the construction industry are familiar with the structured relationships and obligations that result from adherence to a standard form of contract (Ting, 2013). Singh (2002) further explain that standard form benefits in facilitate the conduct of trade and address the common pitfalls and shortcomings in a construction project. Furthermore, equitable apportionment of risk between parties obviates contractors from adding risk premiums and allowances and thereby leads to a fairer commercial transaction between parties. With known workability,

limitations and drawbacks of standard forms, possible claims and disputes are minimized and leads to administrative and cost efficiency in a construction project (Singh, 2002).

Despite the widely accepted advantages identified above, various shortcomings stem from the usage of standard forms. Clarity always perceived as concern in a contract. Singh (2002) explained that complex legal language always used in a contract, which the language is beyond the comprehension of the parties. Other than that, the standardized standard forms controlling the freedom of each parties by fix the terms and conditions of every parties and are not subject to changes, thus govern their legal and commercial relationship. Due to the complexity of construction industry, it is a fallacy that the standard forms can cover all the various situation envisaged in the industry. Besides that, standard forms drafted by powerful interest groups tends to bias in their allocation of risk, rights and obligations. Further detail on the advantage and disadvantage of the standard form are referred to Section 2.4.1 and Section 2.4.2 respectively.

A good standard form of contract helps indeed to reach objectives as mentioned previously. Paciaroni (2013) compiled a list of condition that attributes a “good” construction contract as below:

- It is best suited to deliver the project in the way the parties intended.
- It presents itself as an integrated, well-considered whole.
- It is written in clear, concise, unambiguous language.
- It is mechanically sound.
- It clearly defines the scope of the work.
- It anticipates a wide variety of potential problems.
- It fairly allocates risks to the party who is best positioned to anticipate and control the risks.

- It is balanced.
- It carefully considers all aspects of insurance.
- It has a clear dispute resolution mechanism.
- It must be understood and followed at the project level.

However, past literature in Section 2.6 shows that existing Malaysia's Standard Forms of Contract are problematic and did not comply with the attributes listed by Paciaroni (2013) as mentioned earlier. The following section develops this knowledge-gap, and further assesses the need for standard forms analysis method for local standard form of contract in Malaysia.

1.4 Problem Statement

Literally, standard form of contract is a standard document in a contract that acts as an important role in a construction project. The form will set up all term and conditions that clearly define the rights and obligations of contracting parties, cover all aspect in construction projects, and bind the contracting parties with legal statements (Bubshait & Almohawis, 1994; Chan, 2006; Pathmavathy & Nayagam, 2007; Singh, 2004). The wide use of standard forms in construction projects reflects recognition of the advantages of using standardized general conditions. However, the existence of the numerous numbers of standard forms that are in used today raises a question if the standard form type of contract is indeed complete and effective.

From the extensive literature review on the topic of standard forms of contract as presented in Section 2.6, it is significance that none of the standard forms in Malaysia meets the principle of an "ideal" form of contract. All-embracing studies as discussed in Section 2.6 have been done by past researchers through interviews and questionnaires, standard

forms appears to be problematic as in lack of identity, legalese language, omissions, and imbalance apportion of risk, rights and obligations in respondents' point of view, whereby these problems will water down the effectiveness of a standard form of contract (Ting, 2013).

Newer edition of standard form of contract have been introduced in Malaysia in the past, to be used as replacement of older contracts that may be found as inadequate or ineffective. However, the newer standard form of contract is difficult to be properly assessed of its effectiveness as a "better" or "good" contract due to the existing tool that can be used for such purpose is based on subjective commentary basis. Addition to that, the newer contract may have improved in certain aspect that has been found to be lacking, but at the same time could have introduce more issues. Discussion above supports the need for a theoretical and mathematical framework of form analysis for Malaysian standard forms based on a structured and quantitative approach that is repeatable with a fixed set of criteria to provide numerical results that can be applicable across the board, for form evaluation.

Among the demerits of the standard form in Malaysia, this research focus on three important attributes that contribute to an "ideal" contract, namely clarity, completeness, and distribution of rights and obligations. According to Mohamad Ibrahim et al. (2008), clarity means ease of understanding with no difficulty in translating the documents. The lack of clarity in the contract would give rise to misinterpretation difficulty in understanding the terms used for the standard form of construction contract, which will create a disastrous impact on the project (Chong & Oon, 2016; Chong & Rosli, 2010; Ling & Ting, 2010).

Secondly, a complete contract that covers all possible situation helps to guard against unexpected events and reduce interpersonal risk by specifying the terms that govern and regulate a relationship (Chou, Halevy, & Murnighan, 2011). On the contrary, Goldberg (1976) stated that an incomplete contract may bring about ambiguity, which creates a

breeding ground for shirking responsibility and shifting blame, raises the likelihood of conflict, and hinders the ability to coordinate activities, utilize resources, and implement strategies (as cited in Luo, 2002).

Thirdly, the main purpose of standard forms of construction contract is to provide a basic legal framework identifying the rights, obligations and duties of the parties, establish the ambit of the powers and duties of the contract administrator (Pathmavathy & Nayagam, 2007). If the distribution of rights and obligations that serve as the foundation of contract is not balanced at the initial stage, the contract will inevitably leads to confrontation, disputes and inflated prices (Paciaroni, 2013). Unfair contracts also tend to break down what may be a cooperative spirit between the parties, making it less likely that the parties will work to resolve problems constructively.

An example of the lack of completeness and clarity of contract can be observed from the case law in New Zealand, Marsden Villas Limited v Wooding Construction Limited, where the employer challenged the contractor's right in suspension of work. Detail of the example will be presented in Section 2.7. In this case, the contract did not clearly define the rights for contractor to suspend the work due to late-payment by the employer during the extended period. It raises the question if this dispute can be quickly resolve if the contract defines the right of each parties, and if the penalization for breaching parties was stated, and if the distribution of rights in the contract was well-balanced.

Another case law example that shows the problem of imbalance distribution of rights and obligations is case in Malaysia, Bains Harding (Malaysia) Sdn Bhd v Arab-Malaysian Merchant Bank Bhd & Ors, where the employer exercises the rights to terminate the contract in the absence of any default of the contractor. It can be seen that this provision provides unilateral rights to the employer and places the contractor at a position of huge disadvantage.

It again raises the question if this dispute can be prevented if the condition of termination was clearly defined, and rights to terminate was given equally to both Employer and Contractor.

Based on the two cases mentioned above, it is clear that the clarity, completeness, and balanced distribution of rights and obligations in a construction contract is crucial for its effectiveness in resolving problems that surfaced throughout the construction project. The example cases also prove that standard form of contracts at present are not “good” enough to be used as the tool to prevent and resolve issues in the employer and contractor relationship. Discussion above supports the reason to select clarity, completeness, and balanced distribution of rights and obligations as attributes in theoretical and mathematical framework of form analysis.

By reviewing previous study related to attribute that will be discussed thoroughly in Section 2.8, most of the research methods are through interviews and questionnaire survey, which is dependent of personal’s point of view. Therefore, this research intent to develop a framework including a form analysis method for pre-set attributes that will results an objective evaluation. This research seeks to address the issues discussed above and towards this goal, proposes a number of objectives in the Section 1.5.

1.5 Aim and Objectives

The fundamental aim of this research is to develop a theoretical and mathematical framework for Malaysian construction industry, which outlines a set of parameters for quantitative evaluation of engineering procurement contractual documents.

The objectives of the study are:

- (a) To conduct an in-depth academic analysis on past research that evaluate the Malaysia's standard forms of contract from different perspective.
- (b) To establish a set of standard form measurement and analysis framework.
- (c) To assess the contents of current standard forms of contracts in Malaysia with the established framework.

1.6 Scope of Study

This study will concentrate on the major problems found in standard form of contracts for construction that are used in Malaysia, namely clarity, completeness, and distribution of rights and obligations, especially focus on CIDB Standard Form of Contract for Building Works 2000 Edition.

1.7 Significance of Study

This study will first establish a framework to evaluate the standard form of contract in Malaysia in three parts:

- Clarity of contract
- Contract completeness
- Distribution of rights and obligations of contracting parties

The established framework will then apply on CIDB Standard Form of Contract 2000 to validate its effectiveness. By the end of this research, the validity of the method will be discussed and the quantitative results will be compared with reviews from past literature. The outcome should provide a specific guideline to enhance the standard form.

1.8 Structure of Thesis

The outline of this thesis is described within the following six chapters:

Chapter 1: Introduction

This chapter gives an overview of the complexity of construction project in the construction industry that lead to the need of construction contract and standard form of contract in Malaysia. Other than that, the problem statement, aim and objectives, as well as the scope of study of this research are presented in this chapter.

Chapter 2: Literature Review

This chapter includes the background of studies on journals, articles and sources of information that related to the area of this study. The study from the literature and the reviews from past research on standard form of contract are serve as a proof to justify the significance of this research.

Chapter 3: Methodology

This chapter outlines the method used in conducting this research. A research framework is developed to serve as a guideline of how the research is carried out so as to reply to the aim and objectives of this research.

Chapter 4: Result and Analysis

This chapter put forward the developed framework and the findings from standard form analysis.

Chapter 5: Discussion and Recommendation

This chapter discussed the validation of developed framework from the results obtained.

Chapter 6: Conclusion

This chapter is the outlines the Conclusion of this research as well as the limitation of the research and recommendations for future research.

1.9 Summary of Chapter

This chapter provides an overview of the contracting environment where this research work has been carried out. Furthermore, the needs and the significance of this study have been discussed. Aim and objectives as well as the scope of study are explained in this chapter. Further details and previous study on methodology will be discussed in Chapter 2.

CHAPTER 2

LITERATURE REVIEW

2.1 General

Civil engineering deals with the design, construction and maintenance of the physical and natural built environment, including works such as bridges, roads, canals, and dams. It also takes place on all levels whereby in the public sector from municipal through to federal levels, while in the private sector from individual homeowners through to international companies (Misnan, 2012). However, construction is the major area of civil engineers' expertise. The construction industry is one of the largest industry in the world and still rapidly growing especially in the Middle East and developing countries.

2.2 Construction Project

According to United States Department of Labor (n. d.), construction is a high hazard industry that comprises a wide range of activities involving construction, alteration, and/or repair. On the other hand, Behm (2008) explained that construction project involves building of new structures, which may include activities such as subdividing land for sale as building sites or preparation of sites for new construction. In addition to that, construction work also includes renovations involving additions, alterations, or maintenance and repair of buildings or engineering projects such as highways or utility systems (Behm, 2008).

In the construction industry today, projects are becoming more complicated in the aspect of management and execution. According to Abidin (2007), construction is a complex process involving plenty of activities, myriads of individual, different company or firms,

different size, part of country with different skills and capabilities and always subject to changing environment.

Baccarini (1996) also states that the construction process may be considered the most complex undertaking in any industry. He proposes a definition of project complexity as “consisting of many varied interrelated parts and can be operationalized in terms of differentiation and interdependency.” This definition can be applied to any project dimension relevant to the project management process, such as organisation, technology, environment, information, decision-making and systems, therefore when referring to project complexity it is important to state clearly the type of complexity being dealt with (Baccarini, 1996).

Based on the statements as given above, construction projects are immensely complex due to its involvement of several parties from its beginning in project consultation, until the handing over of the completed project to the employer. Therefore, a construction contract plays a crucial role in binding the numerous parties involved in the construction project, ensuring each party is legally bounded to their roles and responsibilities towards the completion of the project.

2.3 Construction Contracts

Contract is a written or spoken agreement, especially one concerning employment, sales, or tenancy, which is intended to be enforceable by law (Oxford Dictionaries, 2018). Similarly, Blum (2007) also defines contract as an exchange relationship created by oral or written agreement between two or more persons, containing at least one promise, and recognized in law as enforceable.

Lee (2010) also mentioned that contracts are legally binding agreement between two parties and above enforces by the law of contracts. Likewise, as quoted by Ashworth (2012), Sir William Anson describes contracts as ‘a legally binding agreement made between two or more parties, by which rights are acquired by one or more to acts or forbearances on the part of the other or others’. The essential elements of this definition are as follows (as cited in Ashworth, 2012):

- *Legally binding*: not all agreements are legally binding; in particular, there are social or domestic arrangements that are made without any intention of creating legal arrangements.
- *Two or more parties*: in order to have an agreement there must be at least two parties; in law, one cannot make bargains with oneself.
- *Rights are acquired*: an essential feature of a contract is that legal rights are acquired; one person agrees to complete part of a deal and the other person agrees to do something else in return.
- *Forbearances*: to forbear is to refrain from doing something; there may thus be a benefit to one party to have the other party promise not to do something.

For construction contracts, which is one of the types of contracts, focuses more on the parties’ relationship and the activities in a construction project. Whyte (2015) explains that a contract is a legally binding agreement between two or more parties, with the intention to address the (building) scope of a project via an offer by a party with the capacity to carry out the work and an acceptance by a client who needs the facility (built); alongside, a reasonable period of consideration of the obligations involved. In Malaysia, such a contract is a promise or a set of promises that are enforced under the Contract Act 1950 (Whyte, 2015). Based on the definitions above, the roles and responsibilities of parties was stated clearly to avoid

overlapping job. Contract also give provision to extent of obligations, which those obligations maybe varied from time to time (Singh, 2005). For many years, the construction industry has relied on formal contracts to define and enforce the obligations and rights of contracting parties (Cheung, Yiu, & Chim, 2006).

In addition, the parties involved in construction project generally refers to the contractor and the employer. Singh (2005) explained that contract involves one party (contractor) agreed for valuable consideration to undertake to carry out works for another party (employer) involving design (where applicable), fabrication, erection, alteration, repair or demolition of structures and/or installations on a site made available by the latter (Singh, 2005). Identically, Whyte (2015) also stated that an engineering construction contract refers to an agreement that is enforceable by law, executed between the employer and the contractor together with the documents forming the proposed scope of construction work. Other than that, Oon (2002) stated that construction contract differs from other commercial contract, as it including third parties other than employer and contractor. This third person is variously referred to as “the Engineer” in IEM standard forms, the “the Architect” in PAM forms and “the Superintending Officer” or “S.O.” in PWD and CIDB forms.

Among the essential elements in a contract as mentioned above, the most critical is the ‘two or more parties’ element which will be further discussed in the following section.

2.3.1 Parties Involved in Contract

Singh (2002) stated the principle parties involved in a typical engineering/ construction contracts and their respective roles in the particular contract.

- *The employer*: the paymaster, commonly called “the client”, “the purchaser”, and “the authority” who initiates and ultimately uses the tangible fruits of the project in reality.

Such person or persons may be given authority to act as the employer's agent in supervising the works and transmitting information and instructions to the contractor; they may be empowered by the construction contract itself to exercise certification and other decision-making powers that are binding upon both the employer and the contractor.

- *The contractor*: the person or legal entity who under the contract is actually entrusted to carry out the construction works in engineering industry.
- *The sub-contractor*: the contractor hired by main contractor to perform the work under the contract that signed between main contractor and employer.
- *Suppliers*: a person or firm undertaking the supply of goods or materials (excluding services or labour) to a contract. The supplier's contract is with employer.
- *Architect*: any person who is registered as an architect under any law relating to the registration of architects and who under that law is allowed to practice or carry on business as an architect.
- *Engineers*: the other principal body or professions involved in engineering/construction contracts.
- *Quantity surveyors*: a person engaged by architect/ engineer/ employer to play a role during pre-contract and post-contract award stages of a project. During pre-contract award stages, the quantity surveyor involved in preparing cost estimates, taking off quantities from drawing and technical specifications. On award of the contract, the quantity surveyor carrying out measurement and valuation of all work undertaken by contractor and in the processing of the contractor's claim.
- *Authorities*: the state, in undertaking its paternalistic role, has a duty to protect the society from threats to freedom, privacy and rights amongst a host of other danger.

- *Third parties*: parties that include promoters, purchasers, utilities providers, and users that contributes for the purpose of contract.

As a construction contract requires the collaboration of services from different people from different backgrounds for its success, it is better to have an agreement that legally binding between them with clearly documented. This may involve many different contract documents.

2.3.2 Contract Documents

Construction documents must communicate clearly a complex array of technical and legal information defining both the work to be accomplished and the responsibilities of the involved parties (Connell et al., 2008). Singh (2005) mentioned that there are no particular restrictions upon the documents by which a construction contract may be formed. It is trite that the contents of the said documents must accurately and completely record the express terms and conditions of agreement reached by the parties inclusive of all rights, duties, obligations and liabilities. The following is a brief description of the types of documents, which constitute the contract documents (Singh, 2005):

- *Agreement or Articles of agreement*: This document contain planning of a project, describes in general terms the parties, the contract works and the price, and evidences the intention of the parties to be bound. Conditions of the contract will contain elaboration of the express legal terms and conditions, which will govern the contractual relationship between the parties.
- *General Conditions of Contract*: Detailed conditions, often in standard form (with or without amendments), amplify and explain the basic obligations of the parties and lay down administrative procedures to be followed during the progress of the works.

- *Special Contracts Conditions*: Certain information specific to a particular contract, such as dates of commencement or completion and amounts of liquidated damages, is commonly required to be inserted by the parties in an Appendix to the conditions before the contract is executed.
- *Drawings and plans*: Drawings are prepared by whoever is responsible to the employer for the design of all or part of the proposed works, and are the major vehicle for conveying the intentions of the designer to the contractor. Among other matters, they provide information as to the shape, appearance, location and interaction of the component parts of the proposed works;
- *Specifications*: This document amplifies the contract drawings by providing a verbal description of such methods as the scope of work, methods of construction, quality of finishes and standards of workmanship to be provided. It may also specify levels of performance which individual items of work are required to achieve.
- *Bill of quantities*: This document itemises in great detail the contract work as described in the drawings and the specifications. It may, but need not constitute an exhaustive statement of the work, which the contractor undertakes to perform in return for the agreed price. Where, as is common, the bill of quantities is required by the contract to be drawn up in accordance with a particular standard method of measurement, any deviation from the prescribed method may entitle the contractor to claim payment for additional work.
- *Schedule of rates*: Where there is no priced bill of cover feature quantities, a document setting out rates applicable to various categories of contract work may be required for the assessment of interim payments, the valuation of variations or (in a measure and value contract) the calculation of the total amount due to the contractor.

- *Programme or method statement*: Although a contractor is commonly required to furnish such documents, they are frequently defined by the contract in such a way that there is no obligation on either party to comply with the dates or methods contained in them. In such cases, these documents are regarded merely as aids in project planning and coordination.
- *Miscellaneous documents*: Various other documents may be required for sufficiency, clarity and completeness purposes. These include, inter alia, documents such as the contractor's tender submissions, any addenda and/or clarifications, post-tender submission negotiations, documents amending the offer in any way and the like.
- *Design and build document*: Certain design and build contracts replace the documents listed above with three alternative documents comprising the 'Employer's Requirements' issued by the employer and the 'Contractor's Proposals' and the 'Contract Sum Analysis' submitted by the contractor.

In a contract document for construction project, the most important section is the general conditions of contracts. The importance of this document stems from its role in defining the relationships (rights and responsibilities) of the contracting parties in all the projects within an agency or a country (Ting, 2013). Standard form of contract as the general condition of contract is further discussed in next section.

2.4 Standard Form of Contract

Standard forms are printed forms and published by an authoritative body of the industry, which body is recognized by both parties (Ting, 2013). Singh (2004) further explained that the form set out the terms and condition on which the contract between the

parties are to be carried out. These terms or conditions are deemed to be agreed and are not subject to further negotiation and/or amendment.

On the other hand, Elbeltagi (2009) stated that standard forms are prepared jointly by professional bodies and organizations representing contractors or by large organizations and public bodies to suit their own circumstances. The intention is that a common approach by the parties to all contracts will be achieved and standard interpretations of risks and responsibilities involved (Elbeltagi, 2009).

Initially, Sweet (1994) summarises the vital role of standard forms as follows:

- Provide a consensus platform between contracting parties as to allocate risks and responsibilities, remedies, and address administrative practices
- Increase the efficiency of negotiation process and reduce the costs of negotiation; and
- Provide useful connectors between contracting entities that must act together to accomplish their obligations in a construction project.

After that, Pathmavathy & Nayagam (2007) revises the purpose of standard form of construction contract, which is to provide a basic legal framework identifying the rights, obligations and duties of the parties, establish the ambit of the powers and duties of the contract administrator. Correspondingly, Robinson and Lavers (1998) also stated that the standard form of contracts

- Provide the basic legal framework evidencing the legal relationship between the parties.
 - Furnish a mechanism for regulating the conduct of the commercial relationship between the parties
- Put in place the administrative procedures necessary to effect the legal and commercial relationship between the parties for achieving the purposes of the contract.

- Establish the ambit of the powers and duties of the contract administrators under the contract between the parties.

Furthermore, standard forms of contract acts as an important role to address complex legal contractual arrangements and provide the tools to make right and enhance industry practices and unsatisfactory legal rules (Chan, 2006). Bubshait and Almohawis (1994) also explained that the conditions of contract which refers to the standard form of contract is important in defining the roles, responsibilities, rights, and the whole relationship between the commercial parties as well as spelling out the general rules for running the project. The conditions of contract document have a pivotal and vital role in affecting the project success or failure in terms of the iron triangle of time, cost, quality in addition to satisfaction of contracting parties. These risks become more severe when contractors need to deal with unfamiliar conditions (Bubshait & Almohawis, 1994).

Although the standard form of contract can speed up the contract agreement procedures between parties for a project, due to its standardize nature, it may benefit certain parties while putting other parties in a disadvantage position for different project scenarios.

2.4.1 Advantages of Standard Forms

Moh (2014) summarizes two reasons of using standard forms, which is due to the familiarity and uniformity of a standard form and due to the flexibility of using standard forms. Most construction professionals are familiar with their operation, limitations and drawbacks. Such familiarity leads to administrative and cost efficiency. As there is a body of judicial pronouncement accumulated over years on standard form, there is some certainty in meaning. Savings in time and costs when standard forms are used compared to the cost of drawing fresh contracts (Pathmavathy & Nayagam, 2007). Similarly, due to the familiarity

and uniformity of standard form, it enables quicker preparation of tender, documentation and accelerate the negotiation process between parties. It is also wishfully used as a convenience tool for smoother contract administration at construction stage (Moh, 2014).

On the other hand, flexibility refers to the employer's choice on standard form that best suit his intention in a construction project. However, due to the difference expectation of all parties, the standard form of contract can never satisfy all the expectations. Moh (2014) further explain on the expectation of the major contracting parties as below:

- *Employer*: looking for comprehensive forms that will bind and move the contractor to complete the project within agreed period, lowest possible cost whereby at all time that the contractor should assume all kinds of risks.
- *Contractor*: wishes for an unambiguous form with fair provisions to the contractors, defining clearly all the scope and quality of the works with favourable period for execution and most importantly smooth release of payments for work done in the quickest manner while the employer is expected to bear the most of the risks.
- *Contract Administrator and his team*: carry put their respective duties as effectively as possible without any signs of disputes and hope for zero surprises until the full completion of the project.

Close (as cited in Chan, 2006) quoting Sir William McKenzie mentioned that: "It is difficult to measure the advantages that will flow from the general adoption of this Standard Form of Contract. The elimination of uncertainties and ambiguities and the certainty introduced by a standardisation on fair and just lines in clear and simple language must necessarily create confidence throughout the Building Industry; and I cannot doubt will, by reason of equitable and known conditions, result in closer prices and in reducing building costs".

In addition, Construction Industry Contracts Committee (CICC) (2007) listed the benefits of having standardized terms of contracts.

- It becomes more economical as there is no need to draft new terms of contract every time a contract is let out.
- It provides more certainty when tendering.
- Familiarity makes it easier and quicker to be priced.
- It creates the possibility of a more balanced allocation of risk between the contracting parties.
- There is a higher chance of avoiding unwarranted disputes in court or arbitration.

Moreover, Singh (2002) summed up the positive reason justifying the use of standard forms as below:

- The forms have been arrived at through a process of negotiation between various sectors of the industry and as a result act as a compromise between the various powerful interest group.
- They have been widely adopted because experience has shown that they facilitate the conduct of trade and have addressed the common pitfalls and shortcomings.
- The forms satisfy the equitable principle requiring that similar projects demand similar contracts.
- The standard forms allocate risks relatively fairly between parties. Such equitable apportionment of risk obviates contractors from adding risk premiums and allowances and thereby leads to a fairer commercial transaction between parties.
- Most such forms are time tested and practitioners are aware of their workability, limitations and drawbacks. This familiarity leads to administrative and cost efficiency and minimizes possible claims and disputes.

- Over the years these forms have accumulated a body of case law and judicial pronouncements as to interpretation of the various provisions and stipulations which leads to certainty in their implementation
- Employment of Standard Forms avoid the necessity of the parties indulging in a long winded and time wasting process of negotiating the relevant contents of the legal and commercial framework which they intend to put in place. An ‘off the shelf’/ ‘ready-made’ formula is available for the possible adoption by the parties.

Although the advantages of standard form of contracts are many as discussed above, there are also disadvantages, which is discussed in following section.

2.4.2 Disadvantages of Standard Form

Singh (2002) describes that opponents of Standard Forms proffer a host of disadvantage inimical to the adoption of Standard Forms, the principles ones of which are appended as follows:

- Standard Forms contravene the very cornerstone of the law of contract such as the doctrine of freedom to contract. By imposing Standard forms on parties, these parties are prevented from freely deciding on whatever terms and conditions that they deem fit to govern their legal and commercial relationship
- Owing to the multitude and the varied nature of the contracts encountered in the engineering/ construction industry, it is a fallacy to have a standard form covering all eventualities. There is no way in which such a contract is able to cover all the various situations envisaged in the industry. Moreover, such forms rarely record the terms of agreements between parties accurately.

- In situations where such contracts have been used, these have been more likely due to possible ‘arm-twisting’ or ‘economic’ duress rather than consensus between parties. This is especially so in times of economic recession or a slowdown in the industry where employers usually have the ‘take it or leave it’ attitude.
- The belief that the Standard Forms fairly apportion risks between the parties is in reality a myth as the parties are rarely bargaining at arm’s length. Such forms are normally drafted by powerful interest groups inherently biased in their allocation of responsibility
- Most of the standard forms are drafted in legalese, which is in complex legal language beyond the comprehension of the parties and the normal contract administrators and requiring input or the services of legal specialists in interpreting the contents.

2.4.3 Typical Standard Form in Malaysia

The standard form contracts commonly used in Malaysia include the PAM98 Form issued under the sanction of the Pertubuhan Arkitek Malaysia, JKR or PWD Forms issued by the Public Works Department of Malaysia, CIDB Standard Form of Contract for Building Works issued by the Construction Industry Development Board, IEM forms issued by the Institution of Engineers Malaysia. The use of standard form in a construction project is depending on the project owner/employer, type of project as well as the nature of a project and financing involved (Zarabizan, Syuhaida, & Aminah, 2013).

The IEM standard forms essentially are hybrid forms except for the IEM Conditions of Contract for Mechanical and Electrical Works that essentially follows the corresponding FIDIC standard form. The various forms published by IEM, it needs to be appreciated, are the only ones currently for use in private sector civil engineering works and mechanical and electrical works in Malaysia (Oon, 2002).

The current PAM building contract form is PAM 98 Form, which is published in two versions: one with quantities and the other without quantities. PAM 98, as the Form is popularly referred to, is a revised version of PAM 69 Form that is essentially for most practical purposes a lightly amended version of JCT 1963 Form. PAM 98 aims to update and replace PAM/ISM 69 Form. A PAM 1998 Sub- Contract Form is also produced for use where the sub-contractor is nominated under the PAM 98 Form (with or without quantities) (Oon, 2002).

Oon (2002) continue explained that CIDB has to date produced two standard forms; one is CIDB Standard Form of Contract for Building Works (2000 Edition) and the other is CIDB Standard Form of Sub-Contract for Nominated Sub-Contractor. However, CIDB 2000 is not commonly used while compared to other forms such as PAM form or JKR/PWD form. Further details and reviews on CIDB 2000 are referred to Section 2.10.

JKR Sarawak Form of Contract has produced a number of standard forms for use in public sector works, both for building works and civil engineering works. However, it is observed that the forms are also commonly used in private sector contracts. However, it is not the case that all public sector works follow the PWD 203 variants of contract forms especially those funded by World Bank or Asian Development Bank (for example) where preference seems to be for the adoption of FIDIC Forms (Oon, 2002).

As discussed in Section 2.4.1, there are many benefits to the usage of standard form of contract in a project. The most significant advantage to standard form is that it simplifies the procedure of forming a contract between parties, as it is familiarised standard contract document. Although there are disadvantages to standard form of contract, its merits still outweigh it and favours it to be heavily depended by civil engineers in Malaysia today. A

standard form of contract that fulfils all the needs is an ideal contract, which will be discussed in the following section.

2.5 Ideal Contract

A construction contract with the characteristic of easily understood, able to address the myriad of issues and problems that can arise, and properly and fairly balance the risks and rewards between parties, can be expected to enhance the likelihood of success of the project (Paciaroni, 2013). Even though the ideal form of contract that benefits all parties equally cannot be realised, the ideal contract is an important tool to benchmark and gauge how good is the construction contract. Bubshait and Almohawis (1994) broke down the aspects of the general conditions in an ideal contract into the following eleven elements (attributes) for evaluation purpose:

1. Clarity: the ease with which the language of the general conditions can be understood, and the absence of ambiguities;
2. Conciseness: the degree to which the general conditions are free from unnecessary (superfluous) information;
3. Completeness: the degree to which the general conditions cover all contractual aspects;
4. Internal consistency: the level of conflict (if any) between clauses of the general conditions;
5. External consistency: the level of conflict (if any) between a clause in the general conditions and other related regulations;
6. Practicality: the feasibility of implementing the requirements of the general conditions;
7. Fairness: the degree to which the general conditions are fair to the contracting parties;

8. Effect on quality: the degree to which the general conditions promote the meeting of the project's established requirements of materials and workmanship;
9. Effect on cost: the degree to which the general conditions promote the completion of a project within the estimated budget;
10. Effect on schedule: the degree to which the general conditions promote the completion of a project within the allocated time duration;
11. Effect on safety: the degree to which the general conditions promote the completion of a project without major accidents or injuries.

Furthermore, Paciaroni (2013) compiled a list that consists 11 attributes of a “good” construction contract:

- *It is Best Suited to Deliver the Project in the Way the Parties Intended:* Many delivery systems are available to the parties. Great care must be taken to select the project delivery system that is best designed to meet the parties' and the project's expressed needs.
- *It Presents Itself as an Integrated, Well-considered Whole.* Taking shortcuts to save time and/or money should be avoided. Crafting a good construction contract takes a commitment by upper management on both sides to spend time and money up-front. You often only get one chance to get what you need in a contract, so it is an investment that will pay big dividends later if problems or disputes arise.
- *It is written in Clear, Concise, and Unambiguous Language.* The clauses and provisions should be written in language that can be easily understood by someone unfamiliar with the project (such as an arbitrator or judge). Ambiguity in a contract can lead to differing interpretations of critical provisions and, in the case of disputes,

may lead to the introduction of parole evidence and “custom and practice in the industry”—probably a result that neither party wanted or intended.

- *It is Mechanically Sound.* All of the provisions, clauses, definitions and terms should be consistent throughout the document, its exhibits and attachments. The document should read correctly as a whole, leaving no gaps or incomplete references. All exhibits, appendices and attachments should be properly identified, included with the main body of the contract and referenced correctly throughout the body of the contract.
- *It Clearly Defines the Scope of the Work.* Disputes over the scope of the work are the most common of all construction disputes and are typically the costliest. As such, it is critically important that the description of the scope of work be as fully developed as possible so that opportunities for differing interpretations and costly disputes over contract details are avoided.
- *It Anticipates a Wide Variety of Potential Problems.* The construction contract will, in all likelihood, be a non-factor in the success of a project unless and until a serious problem arises. When problems occur, the parties read it, maybe for the first time, in order to determine their respective rights and obligations. By that time, it is sometimes too late to change the outcome of the problem or dispute. Accordingly, a good contract should consider and address the many obstacles that may arise throughout the project and clearly define the method by which problems will be resolved.
- *It Fairly Allocates Risks to the Party who is Best Positioned to Anticipate and Control the Risks.* When one party encourages the other to accept risks that it cannot control, the apprehension that results leads to pricing decisions that are not helpful to delivering the project at the best price. Some examples of risks that are sometimes misallocated include:

- i. Unforeseen site conditions and environmental liability; best for owner to hold.
 - ii. Schedule and time of performance, unforeseen labour conditions, increases in the price of materials, risk of subcontractor non-performance, site control and safety; best for the contractor to hold.
- *It is Balanced.* A contract that is oppressive and heavily in favour of one party inevitably leads to confrontation, disputes and inflated prices. Unfair contracts also tend to break down what may be a cooperative spirit between the parties, making it less likely that the parties will work to resolve problems constructively. Examples of abused clauses include:
 - i. *No damage for delay:* Typically inserted by owners to shift costs of delays to the contractor, but inevitably leading the contractor to claim the delay is the Owner's fault and claim for acceleration.
 - ii. *Onerous indemnity provisions:* One party should not ask the other to indemnify it for its own negligence.
 - iii. *Onerous notice provisions:* Owners sometimes put near impossible requirements on the contractor to give notice of a claim. If these provisions are not followed, the claim is forfeited. While well intentioned, it fosters an adversarial atmosphere, breaking down cooperation.
- *It Carefully considers all Aspects of Insurance.* The insurance program must be well considered and comprehensive. It should address party specific insurance coverage and their defined limits, and should provide for waiver of subrogation so as to avoid finger-pointing if insurance claims are needed.
- *It has a Clear Dispute Resolution Mechanism.* At the stage of contract formation, most people avoid thoughts that the project may result in a "bet the company" dispute, but

the drafting stage is the time to contemplate this scenario and determine a comprehensive dispute resolution clause. Considerations must include choice of law, choice of venue, and choice of language (for international contracts), whether the dispute will be subject to litigation or arbitration, and which party gets to choose the forum. Consideration should also be given to permitting joinder of third parties to any dispute between the owner and the contractor. Much time and money can be wasted in just appointing the decision maker(s) if the dispute resolution clause is not well crafted.

- *It must be Understood and Followed at the Project Level.* Last, but not least, the ultimate value of a good construction contract lies in how well it is understood and followed by the project teams. Those who drafted and negotiated the contract must thoroughly explain the key contract provisions to front line project managers and other project participants, ensuring they fully understand what it is expected and how they must act to preserve the rights of the company. Anything less will risk making all the good effort and attributes identified above meaningless, potentially leading to the forfeiture of important rights.

Besides, a good drafted contract will benefit the contracting parties and ensure the progress of the construction project towards the completion. Table 2.1 listed out the components of good contract with its corresponding benefits (Pathmavathy & Nayagam, 2007).

In a nutshell, a good contract clearly informs each party what it must do and to what it is entitled. It also informs each party of its rights if the other party does not perform as promised. It anticipates the likely problems and resolves them clearly and in a way that strikes the parties as reflecting a proper allocation of risks and responsibilities. However, it is questionable that despite the huge advantages of standard form of contracts, there are a

number of standard form of contract that exists in Malaysia at present. It might be due to the reason that not one of the standard form of contract in Malaysia can satisfy all the requirements of projects and contracting parties. The following section focuses more specifically on past research associated with the standard forms of contract typically used in Malaysia to give a better understanding of the existing problems in local standard forms to meet the principle of “ideal or good contract”.

Table 2.1: Components of a good contract and its benefits

Components of a Good Contract	Benefits
Clearly Stated Scope of Works	Ensures that employer gets what they have paid for and that contractor is clear as to what their responsibilities include
Performance Standards Defined	Ensures accountability and provides measurable standards and goals to be achieved
Limitation of liability	Allocation of risk
Price Structure	Detailed cost estimate from contractor provides up-front awareness of total costs
Completion Date	Ensures that project will be accomplished in a given period of time
Penalty for Failure to Complete on Time	Makes contractor accountable for achieving the negotiated goals within agreed time period
Choice of Law	Important where contracting parties are from different jurisdictions

2.6 Problems Associated with Local Standard forms

2.6.1 PWD 203 A Standard Form of Construction Contract (PWD 203A)

Currently, PWD 203A has published three revision form, which is Rev.10/83, Rev.2007, and Rev.1/2010. Chong and Rosli (2010) in their study comments that the archaic language used in the older edition of PWD 203A Form (Rev. 10/83) makes it difficult to understand. Besides, the analysis obtained through questionnaires showed that more than half (53%) of the experienced respondents agreed that PWD 203A (Rev. 10/83) is poor in

clarity. Table 2.2 and Table 2.3 identified and summarised the clarity and legalese problems that found in the contract clauses (Chong & Rosli, 2010).

Table 2.2: Clarity problems in PWD 203A standard form (Chong & Rosli, 2010)

Item	Problems of Clarity
C1	Sentence is too long, example (Cutts, 2004; Styllis, 2005; Candlin et al., 2002; Henkin, 1988)
C2	Too many passive voices (Cutts, 2004; Styllis, 2005)
C3	Repetition of words (Cutts, 2004; Styllis, 2005; Candlin et al., 2002)
C4	Too many cross-referencing (Styllis, 2005)
C5	Complexity of noun phrases (Styllis, 2005; Henkin, 1988)
C6	Too many “shall” (Styllis, 2005; Henkin, 1988)
C7	Negative style of language (Cutts, 2004; Candlin et al., 2002)
C8	Poor explanation on procedure or process (Broome and Hayes, 1997; Corren, 2000)
C9	Controversial as legal terms (Duhaime, 2007)
C10	Ambiguous word or sentence caused more than one meaning (Harmon, 2003)
C11	Poor words formation, e.g. grammar in the contract (Cutts, 2004)

Table 2.3: Legalese problems in PWD 203A standard form (Chong & Rosli, 2010)

Item	Problems of Legalese
L1	Too many legal terms or phrases (Cutts, 2004; Mohamad and Zulkifli, 2006)
L2	Specialised vocabulary or legal jargon (Cutts, 2004)
L3	Unnecessary length and complexity (Hill, 2001; Rameezdeen and Rajapakse, 2007)
L4	Overly complicated, dense, repetitive, and outdated (Candlin et al., 2002)

Besides, The Entrusty Group (2006a) identified that all standard forms of construction contracts have a retention sum requirement apart from the PWD 203A (Rev. 10/83). In addition, in term of provision regarding to extension of time, most of the standard form of

contracts in Malaysia, i.e. PAM 98/JKR PWD 203/IEM /CIDB 2000, do not clearly express the provisions in dealing with 'float'. Thus, the consequences that are contained in the provisions of these contracts can be interpreted differently depending on the wordings of the respective provision (The Entrust Group, 2006a, 2006b).

Even with later edition published in 2008, PWD 203A (Rev.2007) still appears as problematic. Noushad and Singh (as cited in Ting, 2013) in their separate study claims that this form has been unable to improve the desired clarity. Despite some improvements in content, style and formatting, PWD 203A (Rev. 2007) are still perceived to be cluttered with legalese, with omissions and deficiencies and in some cases, simplistic 'cut and paste' amendments, which appear perhaps to water down the effectiveness of the standard forms (Ting, 2013).

Other than that, 2007 edition of contract provide imbalance distribution of rights and obligations to contracting parties. In PWD 203A (Rev. 2007), the contract is made between the government and the contractor, but the government and the contractor are not allowed to make direct communication with each other. They can only communicate through superintending officer, the one who is given rights to make decision on behalf of the government. This kind of relationship puts the superintending officer in dilemma, whether to act on behalf of the government or to act impartially, depending on the officer's professionalism, religious belief, and the contractor's reaction to the officer's impartiality (Zarabizan et al., 2013). Besides, employer is the only party that given rights to set-off or terminate the project, which the provision is unfair for contractor (Lee & Azizan, 2012).

By comparing to PWD 203A (Rev.2007) with other standard forms, Goh (as cited in Ting, 2013) stated that this form is poor in sequences of clauses from pre-construction stage to post construction stage, lack of explanation for the insurances for foreign workers, no

specific provision for safety matters, poor in procedural requiring the contractor to take full responsibility for the safety operation and method of construction to be complied. Moreover, there is no clear provision provided for duty of government, defects notification period, right of contractor to propose variation, right of superintending officer to initiate variation, variation procedure, right of contractor to terminate a contract, right of contractor to suspend work, advanced payment, performance bond, and government's indemnity to the contractor (Quay & Ting, 2009; The Entrusty Group, 2008; Umi Kalsum, Norhanim, Hafez, Azlan Shah, & Loh, 2011).

Despite the bad review on previous edition, PWD has taken steps to make amendments to the Standard Conditions of Contract PWD 203/203A (Revision 1/2010) to further strengthen the payment procedure on ensuring contractor is paid fairly and accordingly. New edition includes provision for advance payment, giving rights of Government to terminate the contract and recover liquidated and ascertained damages from the contractor from any money due/become due/ from Performance Bond/ as a debt due, allows the contractor to terminate the government because of fails to fulfil any obligation which affects the works & consequences of such termination (Hasnita, 2015).

2.6.2 Pertubuhan Arkitek Malaysia Standard Forms of Building Contract (PAM)

Currently, PAM has published two revision form, which is PAM 1998 and PAM 2006. According to Rajoo (2010), despite some improvements in style and formatting, the PAM 2006 Form is still cluttered with deficiencies, material omissions and provisions which an average building construction practitioner may find difficult to comprehend and implement. He further concluded that the drafting of the PAM 2006 Form seems rather awkward and artificial, and the language does not quite flow. The layout and design of the form is

inadequate and confusing (Rajoo, 2010). Taking Clause 11.0 of PAM 2006 as an example, most of the contract provisions in the clause contain problems of language-structure in terms of poor clarity and the use of legalese. The problems of language-structure include passive voice, negative styles of language, the misuse of 'shall', repetitive words and procedures, and long sentences (Chong & Oon, 2016).

On the other hand, regarding to the issue of contractor's right of action for late or non-payment by the employer, PAM 1998 contain no provision that entitles the contractor to claim for interest or to suspend the work, but rights is given to determine the contract. However, the revised edition of 2006 makes amendment on this by providing the contractor rights of aforementioned action (Judi & Rashid, 2010). Furthermore, termination by employer is no longer with his sole discretion under PAM 2006, procedures and conditions were set out to prevent the employer to set-off unreasonably. In this case, contractor can argue and disagree with the amount of set-off and termination by employer is exercised only when the amount has been agreed by the contractor or the adjudicator has been issued his decision (Lee & Azizan, 2012; The Entrusty Group, 2008).

Liaw (2012) in his study on revised extension of time clause by comparing PAM 1998 and PAM 2006 concludes that the additional provision in revision of extension of time by the Architect is not betterment for the construction industry. However, the revised edition is mostly neutral to both of the employer and contractor and without biased to any one of the parties. The changes in the time frame for submission and additional provision in changes to law/terms of authority/services as relevant events are in the favour to the employer, while the additional provision in instruction for insufficient information and revision of granted extension of time by architect, execution of work under a provisional quantity and

suspension by the contractor as relevant events are in the favour to the contractor (Liaw, 2012).

According to Rajoo (2010), the rights of employers in PAM 2006 is limited while the risks borne by the contractors is reduced, which consequently transfer more risk involved in the contract to the employer. This reallocation of risks seems to be more balanced, but proportionately increases the employer's exposure and burden in terms of claims and payments while providing more possible grounds for disputes between the contractor and employer (Rajoo, 2010).

In addition, a study by UNIMAS researchers indicates that some provisions of the PAM 2006 remain unclear and incomplete when it comes to issues such as commencement of work, work programme, suspension and acceleration (Ling & Ting, 2010). Besides, it remains rather silent on certain issues and obligations regarding to occupational health and safety, material and workmanship, testing and inspection, and dispute resolution in terms of completeness, versatility and clarity (Goh, 2009; Quay & Ting, 2009). Furthermore, Quay (as cited in Ting, 2013) explained that the form is heavily reliant on the Contract Administrator's decision for gaps of provision, which might lead to dissatisfaction. Provisions with unclear and ambiguous statement leaves room for undesirable interpretations and hence leading to disputes, which eventually affects the quality of Works.

2.6.3 IEM Conditions of Contract Mainly for Civil Engineering Works (IEM CE)

Currently, IEM has published two form, which is IEM 89 CE and the revision form IEM. CE. 2011. Oon (as cited in Ting, 2013) in his study on IEM 89 CE comments that the clauses in the form are generally lacking of consistencies, time frames and procedures and definitions and usage of inappropriate terms. According to The Entrusty Group (2006), The

IEM 89 CE does not clearly express the provisions in dealing with ‘float’. Thus, the consequences that are contained in the provision of the contract can be dependent on the wording of the respective provisions extension of time. Furthermore, in term of notification of delay and application for extension of time, Lim (as cited in Ting, 2013) stated that the IEM 89 CE does not stipulate the timeframes within which the contractor is to notify the engineer of a delay and apply for an extension of time.

Regarding to the issue of determination of employment and termination of contract, The Entrusty Group (2008) summarizes that, the related provisions is not as comprehensive as PAM 2006 and CIDB 2000. For example, contractor is given rights to terminate the contract, but he is not entitled to be paid the amount for work done and not entitled for the loss and expense resulting from termination. Other than that, failure by the employer to appoint superintending officer upon his death or suspension of works by employer will not entitled the contractor to terminate the contract. Besides, Siti Nurhayati and Zulhabri (2015) in their study stated that, IEM 89 CE did not have any form of mediation clause.

Despite the huge problems found in IEM 89 CE, the latest revision of IEM form (IEM. CE. 2011) appears to improve greatly in terms of clarity (Chong & Oon, 2016).

- Extensive use of vertical lists to break up complex paragraph
- Elimination of ‘shall’ and replaced by ‘must’
- The meanings of ‘will’ and ‘may’ is explained to eliminate confusion about the legal obligations for the involved parties
- Length of sentences limited to 15-20 words
- Punctuations (notably commas) and conjunctions have been placed at appropriate points in the text that are more than 20 words

- Approximately 80% of the contract employs active voice, positive style and verb phrases
- Most of the common legal jargons have been replaced by simple and clear terminologies or phrases
- Repetition of words with same meaning has been eliminated
- Everyday words and grammars have been used as much as possible

2.6.4 CIDB Form of Contract for Building Works 2000 (CIDB 2000)

Construction Industry Development Board (CIDB) with the intention to make the usage of their forms commonplace and to replace PWD Forms, established the only standard form, namely CIDB 2000. This form appears to achieve a quite good comment from past research.

Ting and Whyte (as cited in Ting, 2013) concluded CIDB 2000 as one form in Malaysia that emphasise the need for a unified form of contract in Malaysian construction industry. It is the most comprehensive form amongst all the local construction contract forms, which stipulates the right of the contracted parties and provides clear guidelines and procedures. It also covers most of the aspect in occupation safety and health (OSH) (Goh, 2009).

Various study has been conducted to determine how CIDB 2000 cope with the problem arise from a construction project by comparing CIDB 2000 with other types of standard form in Malaysia. One of the hot issues is related to the non-payments or late payments by the employer. Judi and Rashid (2010) reviewed on several contractor's right of action for such issue, whereby CIDB 2000 provides additional security to Contractor by giving contractor certain provision. The triple mechanism of interest, suspension and determination, together

with a demand made on the payment bond (if Option Module E is adopted) go a longer way compared to all other standard forms in Malaysia in proving greater security to the Contractor in securing payment (Judi & Rashid, 2010; Oon, 2002).

Other than that, The Entrust Group (2008) analyses that CIDB 2000 form of contract covers biggest scope of variations as compare to PAM 2006, PAM 1998, IEM, JKR PWD 203A (83/07), and JKR PWD DB/T. Moreover, in Quay and Ting's (2009) study on the adequacy of quality provision in standard forms of local and international standard form of contract, results show that CIDB 2000 caters for multiple options and scenarios by which steps are allocated for the varying problems that may arise. This is more advantageous since consequences are laid out early rather than having to wait for the Contract Administrator's decision. In addition, CIDB 2000 has the best structure as compared to PWD, PAM and FIDIC. The significant amount of bullets and point forms in their quality clauses makes the spelling out of quality clearer (Ting, 2013).

Regarding to the issue of performance security, in most standard form, a performance bond is usually provided by the contractor to ensure, or compel, the performance of the contractor's obligations under the contract, while the employer is not required in most standard form to provide a bond to the Contractor to guard against his non-performance. This is illustration of the inequality of bargaining power of the two parties to a construction contract, which is unfair for contractor and might lead to disputes (Oon, 2002). However, CIDB 2000 recognized this commercial tussle and has made the submission of performance bond becomes part of appendix (Option module F in CIDB 2000). Therefore, it will be depend on the agreement between contractor and the employer, whether both parties should submit performance bond or not (Hansen, 2011). It can be said that CIDB 2000 balances the rights of both contractor and employer in submitting performance bond. However, the

effectiveness of this gesture in restoring some equality to the contracting scene remains to be seen, as the CIDB 2000 is to date relatively untested (Oon, 2002).

CIDB 2000 is thought to streamline contractors by providing an elaborate framework for the effective and efficient administration of contract so as to reduce uncertainties with its associated costs and delays (Wong, as cited in Ting, 2013). Furthermore, Rajoo (2010) also commented that since its launch in 2000, the CIDB Form of building contract is viewed as too pro-contractor and it is hardly used in the Malaysian construction industry. Employers have shunned it. Moreover, Ting, Sia and Whyte (as cited in Ting, 2013) also found that many industry practitioners comment that CIDB 2000 is perceived as too contractor-friendly, offering less protection to the Client than the more traditional PWD 75.

2.7 The Need of Evaluation Framework

Table 2.4 summarised the study and respective results discussed in previous section.

Table 2.4: Summary of past research and its research outcome

Standard Form	Past Research	Research Outcome
JKR / PWD	The Entrusty Group (2006)	Incomplete provision in dealing with 'float' Incomplete provision regarding retention sum
	Noushad (2008)	Poor in clarity
	Singh (2009)	Did not achieve clarity
	Quay and Ting (2009)	Incomplete quality provisions Imbalance allocation of rights and obligation
	Goh (2009) The Entrusty Group (2008) Umi Kalsum et al. (2011)	Poor in clause sequence No provision for safety Poor in procedural and lack in explanation for certain issue
	Ling and Ting (2010)	Incomplete and unclear time provisions Imbalance allocation of rights
	Chong and Rosli (2010)	Clarity and legalese problems

Table 2.4 continued

Standard Form	Past Research	Research Outcome
JKR / PWD	Lee and Azizan (2012)	Imbalance allocation of rights
	Ting (2013)	Deficiencies in comprehensiveness, fairness/role distribution, and risk distribution
	Zarabizan et al. (2013)	Imbalance allocation of rights
	Hanista (2015)	Improve in payment provisions
PAM	The Entrusty Group (2008)	Clearly stated conditions to avoid misuse of rights
	Quay and Ting (2009)	Incomplete and unclear quality provisions Imbalance allocation of obligation
	Goh (2009)	Incomplete safety provisions Imbalance allocation of obligation
	Ling and Ting (2010)	Incomplete and unclear time provisions
	Judi and Rashid (2010)	Improve in allocation of rights
	Rajoo (2010)	Language not quite flow, difficult to comprehend Inadequate layout and design Improve in allocation of risk
	Liaw (2012)	Revision clause not for betterment Improve in allocation of rights and obligation
	Ting (2013)	Deficiencies in comprehensiveness, consistency, and clear structured framework for project management
	Chong and Oon (2016)	Language-structure problems
IEM	Oon (2002)	Lacking of consistencies, time frames and procedures and definitions and usage of inappropriate terms
	Lim (2005)	Incomplete provision in notification of delay and application for extension of time
	The Entrusty Group (2006)	Incomplete provision in dealing with 'float'
	The Entrusty Group (2008)	Incomplete provisions regarding to determination and termination issue
	Ting (2013)	Deficiencies in comprehensiveness, completeness, fairness/role distribution, and risk distribution

Table 2.4 continued

Standard Form	Past Research	Research Outcome
IEM	Siti Nurhayati and Zulhabri (2015)	No provision for mediation
	Chong and Oon (2016)	Improve in clarity
CIDB	Oon (2002)	Balance allocation of rights
	Wong (2002)	Clear administration framework to reduce uncertainties
	The Entrusty Group (2008)	Covers biggest scope of variations
	Quay and Ting (2009)	Adequate in quality provisions
	Goh (2009)	Covers most safety provisions
	Ting & Whyte (2009)	Most comprehensive form among local standard form
	Rajoo (2010)	Too pro-contractor
	Ting, Sia and Whyte (2010)	Too contractor-friendly
	Judi and Rashid (2010)	Balance allocation of rights
	Ting (2013)	Best structure among local standard form Good in layout design using bullets and points Deficiencies in comprehensiveness and completeness

Ting (2013) summarised the problems generally with local standard forms in Malaysia and commented that all the forms have inconsistencies, even though several forms have merits with some being more popular than others. According to Mohamad Ibrahim et al. (2012), contractual provisions in standard forms is not adequate to manage the construction failure in Malaysia. The survey in their study shows that most of the respondents agree, there are limitations when using the contract documents. In short, standard forms in Malaysia is problematic and did not meet the principle of idealness.

Newer edition of standard form of contract have been introduced in Malaysia in the past, to be used as replacement of older contracts that may be found as inadequate or ineffective. However, the newer standard form of contract is difficult to be properly assessed of its effectiveness as a “better” or “good” contract due to there is no existing tool that can be used for such purpose. Addition to that, the newer contract may have improved in certain aspect that has been found to be lacking, but at the same time could have introduce more issues. Review above bring up the importance of developing a theoretical and mathematical framework of form analysis for Malaysian standard forms that is repeatable and applicable across the board, for form evaluation.

Among the demerits in standard form, most of the standard form in Malaysia is problematic in terms of clarity, completeness, and fairness in distribution of rights and obligation. A standard form with poor clarity may cause improper understanding of the documents and lead to the different interpretations that may result in unnecessary contractual problems such as disputes, unnecessary claims, reworks, shoddy works, and even litigation (Mohamad Ibrahim, Zulkifli, Rosli, & Shaiful, 2008). Similarly, an incomplete standard form may bring about ambiguity, which creates a breeding ground for shirking responsibility and shifting blame, raises the likelihood of conflict, and hinders the ability to coordinate activities, utilize resources, and implement strategies (Luo, 2002). Correspondingly, unfair standard form will tend to break down what may be a cooperative spirit between the parties, making it less likely that the parties will work to resolve problems constructively, and leads to confrontation, disputes and inflated prices (Paciaroni, 2013).

An example of the lack of completeness and clarity of contract can be observed from the case law in New Zealand, *Marsden Villas Limited v Wooding Construction Limited* (2006), where the Employer challenged the contractor’s right in suspension of work. The

contract has gone overtime and the contractor has submitted several payment claims for the extended time. The employer failed to deliver the payments, resulting the contractor to suspend work. The employer argued that the contractor was not entitled for suspension when they had served the contract payment schedule that was within the contract period. However, the court held that the contractor was entitled for the payment claims for extended time, subsequently also entitled the right for suspension of work and the only way to lift the suspension was to pay the claimed amount in full. The case was eventually settled in court and it can be seen that the contract did not clearly define the rights for contractor to suspend the work due to late-payment by the employer. It raises the question if this dispute can be quickly resolve if the contract defines the right of each parties, and if the penalization for breaching parties was stated, and if the distribution of rights in the contract was well-balanced.

Another case law example that shows the problem of imbalance distribution of rights and obligations is case in Malaysia, Bains Harding (Malaysia) Sdn Bhd v Arab-Malaysian Merchant Bank Bhd & Ors (1996), where the employer exercises the rights to terminate the contract in the absence of any default of the contractor. The employer terminated contract with the contractor for the sole purpose of employing another sub-contractor. The termination enabled the employer to pay the new sub-contractor with the remaining profit from the contract. It can be seen that this provision provides unilateral rights to the employer and places the contractor at a position of huge disadvantage. It again raises the question if this dispute can be prevented if the condition of termination was clearly defined, and rights to terminate was given equally to both Employer and Contractor.

Based on the two cases mentioned above, it is clear that the clarity, completeness, and balanced distribution of rights and obligations in a construction contract is crucial for its

effectiveness in resolving problems that surfaced throughout the construction project. The example cases also prove that standard form of contracts at present are not “good” enough to be used as the tool to prevent and resolve issues in the employer and contractor relationship. Hence, it is important to develop a framework that is able to analyse the clarity, the completeness, and distribution of rights and obligation of a standard form of contract, clauses by clauses, in order to gain a better understanding on the problems in standard form. Following section will first look into details of each attributes, subsequently looks into the various theoretical methods available from past research, to assist in the design of a method to study objectively the local Malaysian standard forms of contract.

2.8 Past Studies of Attributes

2.8.1 Clarity

Rameezdeen and Rodrigo (2013, 2014) adopted an objective measure of clarity by using a quantitative content analysis tools, Flesch Reading Ease Score (FRES), which is developed by linguists to determine the readability of FIDIC form (international standard form used in Malaysia). The formula is as shown as below.

$$\text{FRES} = 206.835 - (1.015 \times \text{ASL}) - (84.6 \times \text{ASW})$$

Where, ASL = Average sentence length

$$= \frac{\text{The number of words}}{\text{The number of sentences}}$$

ASW = Average number of syllables per word

$$= \frac{\text{The number of syllables}}{\text{The number of words}}$$

This formula measures the readability of the contract by calculating the average sentence length and average number of syllables per word in every clause. However, clarity

does not only include these two elements. Other than the length of the sentences, the style and the structure of the sentences will also affect the readability of contract.

According to Sanyal (2006), sentence length is closely related to clarity. Plain language experts such as Cutts (2004), Candlin et al. (2002) suggest sentence length should be around 20 words or less per sentence. Rudolph Flesch, creator of the Flesch reading ease formula, derived a readability table showing that average sentence length of 21 words with 33 syllables in a sentence is considered fairly difficult to read. Also, recommendations from drafting scholars regarding average sentence length is 25 to 30 words which are based upon readability standards like the Flesch test (Espenschied, 2010).

Other than the length of the sentences, the style of sentences was also one of the problems that will affect the readability of contract. Cutts (2013) suggests avoiding overusing negatives for clarity purposes. Negatives include ‘un-’ words like ‘unnecessary’ and ‘unless’; verbs with negative associations like ‘avoid’ and ‘undo’; and the obvious ones like ‘not’, ‘no’, ‘except’, ‘less than’, ‘not less than’, and ‘not more than’. When few negatives lurk in the same sentence, meaning of may become obscure (Cutts, 2013). Also, positive style sentence is usually clearer and less wordy than those written with negative style.

Besides, few researchers concludes that a contract drafted with active voices and positive style sentences will highly increase the clarity of contract, while the opposite way of drafting will contribute to poor clarity (Adams, 2013; Candlin, Bhatia, & Jensen, 2002; Cutts, 2013; Wilder, 2014). In addition, Espenschied (2010) explains that active voice is preferred for most performance provisions in legal documents for several reasons:

- Active voice specifies “who” is responsible to act
- Active voices use stronger verb forms
- Active voices eliminate clutter

- Active voices are easier to follow, because the reader is able to visualise the party taking action.

Moreover, Ali and Wilkinson (2010) states that cross-references may be inevitable in long and complex contracts but multiple cross-references in a paragraph should be limited. Too many cross-references will interrupt a document's flow and inferring interpretation from reading the contract as a whole or repeating contractual provisions. If the point can't be made in a way that people can understand, it may not be worth using cross-references (Cutts, 2013).

Besides, Reed and Barron (2014) suggested that contract should be drafted by omitting legal jargon and unnecessary words, and eliminating wordy phrases, so that it will be easy to read and understand by legal and lay audiences.

Chong and Rosli (2009) in their research on a case study into the language structure of construction standard form in Malaysia, adopt the mixed method approach. Quantitative approach is done by collect data through questionnaire surveys and analyse the data using SPSS Version 15.0. Likert scale as shown in Table 2.5 was selected for the questionnaire design.

Table 2.5: Likert scale for questionnaire design

Categories	Strongly disagree	Disagree	Undecided/ Neutral	Agree	Strongly agree
Weights	-2	-1	0	+1	+2

The data collected through the survey was then analysed using the average index method.

$$\text{Average Index} = \frac{\sum a_i x_i}{\sum x_i}$$

where a_i = value of scale ($i = -2, -1, 0, 1, 2$)

x_i = respondent frequency ($i = 1, 2, 3, 4, 5$)

After that, average index was classified and rated using scale as shown below.

$$\text{Disagree} = -2.00 \leq \text{Average Index} < -0.50$$

$$\text{Undecided} = -0.50 \leq \text{Average Index} < +0.50$$

$$\text{Disagree} = +0.50 \leq \text{Average Index} \leq +2.00$$

On the other hand, semi-structured interviews were used as qualitative approach to approve the questionnaire design and verify the data obtained. The findings of these interviews largely enhanced the validity and value of the research (Chong & Rosli, 2010).

From the literature, only research by Rameezdeen and Rodrigo (2013, 2014) adopted quantitative analysis tool by analysing the contents in contract which is a more objective method of analysis as compared to collecting data through questionnaires. However, they evaluate the clarity of contract by using average sentence length and average number of syllables per word in every clause only, which is inadequate. Hence, it is proposed to adopt the quantitative contents analysis method but includes more parameters, which will be discussed in Section 3.4.1.1.

2.8.2 Completeness

Few studies by UNIMAS researchers defined completeness as the degree of issue-related clauses and provisions cover all the basic and necessary contractual aspects of the issue (Ling & Ting, 2010; Quay & Ting, 2009). They indicate the incompleteness of the standard forms in certain issues by studying and comparing the issue-related clauses of a standard form with another standard form. Semi-structured interviews and case study on cases of disputes due to related issues were conducted by them to improve the robustness of the academic analyses of the issue-related clauses. However, this kind of research method depends heavily on the researchers' understanding on the legalese language in the contract

and their experience to recognise the lacking parts and components of the clause. Secondly, the comparison method has a flaw where there is no benchmark of a fully complete clause. Instead, incomplete clauses are compared which may result in inaccuracy due to mismatched incompleteness. Thirdly, the lacking of disputes do not indicate a full completeness of a clause but may indicate that the incompleteness of the clause cannot be detected by the method.

Ting (2013) in her study adopted mixed method approach to address the weakness mentioned above. Questionnaire survey is used to set the weightage of selected attributes for form analysis and form evaluation. Problematic clauses identified from the study is gathered and compare with the related clauses in NEC contract, which the contract is selected as a benchmark of an ideal contract. Lastly, semi-structured interviews and coding method is conducted to verify the results obtained from form analysis.

Research on completeness of construction's standard form of contract is very limited. Nevertheless, contractual completeness has been investigated widely in other sector. Most of the researchers use contract completeness as a main factor to determine how it affect the relationship between the parties and also the performance of the contract.

In public sector, Brown, Potoski and Van Slyke (2007) states that contract completeness is the degree to which these various elements are contractually specified, most importantly by defining task, outcomes, and compensation as the basic terms of exchange. These core elements structure the degree to which the contract is complete. Around these core elements, contracts can be more or less complete based on the number and specificity of the layers of governance features that specify how the exchange will take place and how the parties will interact in the course of delivering the service (Brown et al., 2007).

Chou, Halevy & Murnighan (2011) from the perspective of business management, define contracts as more complete when they place increasing restrictions on the parties' action. 'The specificity of its language' and 'the number of clauses it contains' are two elements that contribute to a contract's completeness. Through questionnaire study, they found that complete contracts act as a signal and reduce relational expectations, subjective satisfaction, and trust; they also lead to less cooperative behaviour (Chou et al., 2011).

In the sector of franchising, Hendrikse and Windsperger (2011) explain the determinants of contractual completeness in franchise relationships by formulating and testing various propositions derived from transaction cost theory, agency theory, property rights theory, organizational capability theory and relational view of governance. They define contractual completeness as the ratio between specific rights and residual decision rights stipulated in contracts. The higher the ratio, the more complete the contract. Their study through questionnaire shows that the degree of contractual completeness depends on behavioural uncertainty (negatively), trust (positively) and intangibility of system specific know-how (negatively) (Hendrikse & Windsperger, 2011).

In organizational economics literature, Luo (2005) interprets contractual completeness as a three-dimensional construct that includes the extent to which contractual terms are clearly specified (term specificity), possible contingencies are accounted for (contingency adaptability), and each party are legally bound to the contract (contractual obligatoriness).

Term specificity refers to the degree to which all relevant terms and clauses specified in a contract. This dimension codifies the rights, duties, and responsibilities of each party, thus restraining each party from taking opportunistic action (Luo, 2005). Furthermore, Luo (2005) claims that for a specific clause or issue, degree of specification may also vary, depending on the needs or conditions being faced. He also gives an example on the

accounting issue in international joint ventures (IJV) contract, a highly specified contract may explicitly delineate the fiscal year period, dividend policies, allocation of retained earnings, currency and language used in bookkeeping and financial statements, auditing, working capital management, and report policies to board members. In contrast, ambiguous specification may describe only how to share and allocate retained earnings after tax.

Unlike term specificity, which refers to how specific and detailed contract terms are, contingency adaptability involves how to respond contractually to future problems, conflicts, and contingencies (Luo, 2005). It includes principles or guidelines pre-specifying appropriate ways, procedures, or alternatives to deal with various unpredicted situations before it becomes crucial. In practice, these guidelines or possible solutions are incorporated in a contract as either independent terms (e.g., procedures for handling important contingencies; guidelines in case of doubt or hazards; approaches for overcoming conflict and handling force majeure) or as a part of related clauses in specific areas (e.g., how to handle unanticipated changes in the market, governmental policies, export prices, quota constraints) (Luo, 2005).

In addition, contractual obligatoriness is the extent to which each party involved in a construction project is restrained by the binding force of the contract (Luo, 2005). It includes such clauses or terms as legal binding force of the overall contract (legal effectiveness of the contract, applicable law, force majeure, amendments, alternations, discharge of the contract, and settlement of disputes), penalization against the breaching party, and protection for the aggrieved party. This dimension will enforce the parties involved to take a contract seriously.

This theory by Luo (2005) is adopted by Lu, Zhang and Zhang (2016) to assess the extent of these dimensions affect the contractors' opportunistic behaviour and the moderating role of interdependence in construction industry. Initially, data is collected via

questionnaire survey, where the respondents were asked to evaluate their degree of agreement with the statements on a seven-point Likert scale from 1 (strongly disagree) to 7 (strongly agree), in accordance with their experience in a recently finished construction project. Subsequently, multiple regression analyses are adopted to test the study hypotheses on the relationship between contract completeness and contractors' opportunistic behaviour. Besides, moderated multiple regressions (MMRs) were employed to examine whether interdependence (magnitude or asymmetry) can further affect the direction and strength of the relationship between contract completeness and contractors' opportunistic behaviour. Hierarchical regressions were used in this study to examine the presence of moderating effects (Lu, Zhang, & Zhang, 2016).

From the literature, Luo (2005) gives a more comprehensive explanation on completeness of contract as compared to other researchers. However, the study by Lu, Zhang, Zhang (2016) that adopted this theory was conducted through questionnaire survey, which is on subjective commentary basis. Hence, it is proposed to adopt Luo's concept on completeness for parameters in framework, but evaluate the completeness of contract in a more objective way, which will be discussed in Section 3.4.1.2.

2.8.3 Distribution of Rights and Obligations

Similar to the research on completeness, UNIMAS researchers identify the imbalance distribution of rights and obligations of contracting parties by comparing issue-related clauses in selected standard forms. Besides, Ting (2013) in her study examine the fairness of the standard form via clause study, benchmarking problematic clause with selected ideal contract and verify the results obtained via semi-structured interviews. This research did not

examine and calculate how many rights and how many obligations is designated to each contracting party.

A recent study by UNIMAS researchers works on this direction to evaluate the distribution of rights and obligation in the local and international standard form using qualitative measure (Ng, 2014; Sharon, 2014; Siaw, 2014). They studied and interpreted every sentence in the clause at first, subsequently listed down the rights and obligation for each contracting party. Upon completion of interpreting and listing, the number of listed rights and obligations are summed up and further analysed by using minimum ratio formula as shown as follows.

$$R = \text{Min} \left(\frac{\text{No. of rights}}{\text{No. of obligations}}, \frac{\text{No. of obligations}}{\text{No. of rights}} \right)$$

Minimum ratio obtained was then classified using five-point Likert Scale. This kind of research method also depends heavily on the researchers' understanding on the clauses and their experience to classify the rights and obligations of a party. Hence, in order to minimise the uncertainty during the interpretation of meaning and legal effect of the words used in a written contract, it is important to ascertain the meaning of "rights" and "obligation" and the language used to denote them during the drafting of a contract.

According to Oxford's Dictionary and Longman's Dictionary, the definition of rights and obligation are defined as in Table 2.6 and Table 2.7.

Table 2.6: Definition of rights

RIGHTS	
Longman's Dictionary	Oxford's Dictionary
1. That to which a person has a just or lawful claim. 2. An interest which will be recognised and protected by a rule of law, respect for which is a legal duty, violation of which is a legal wrong	1. Title to or an interest in any property. 2. Any other interest or privilege recognized and protected by law. 3. Freedom to exercise any power conferred by law.

Table 2.7: Definition of obligations

OBLIGATIONS	
Longman's Dictionary	Oxford's Dictionary
1. A duty, usually legal or moral and of one's choosing, to undertake or not to undertake a course of action. 'The word means, primarily, a tie. Legally it was in origin the binding tie established by what is called a "bond" as between obligor and the oblige': 2. A bond with a condition annexed, usually involving a penalty for non-fulfilment.	1. A legal duty. 2. A *bond by deed.

The definitions from Table 2.6 clearly expressed the meaning of rights in terms of contract as “that to which a person has a just or lawful claim”. According to Sastry (2011), a right confers certain liberties or privileges and imposes duties upon individuals to exercise while claiming their rights. A number of jurists define the concept of exercise of rights with duty as positive and negative rights. Accordingly, the person who is possessive of positive rights entitled to provision of some goods or services. A holder of negative right is entitled to non-interference. In the eyes of law, right confers on a person certain amount of liberties and privileges. Messick (1996) simplify his opinion about “right” as a kind of property we can hold, stand on, or act within; as something we can exercise if we choose, perhaps by asserting it against others.

During the drafting of a contract, language of discretion is often use to denote the rights of a party. Language of discretion is language stating that a party has the discretion to take or not take a specified action. Discretion is primarily conveyed by means of “may”, expressing permission or sanction (Adams, 2013). Greene (1863) also stated that “may” denotes power imparted by others that is, liberty or permission; can denotes power or ability, belonging to one's self. When used in an active construction, “may” means “has discretion

to,” “is permitted to,” or “is authorized to.” For example: *The indemnified party may at its expense retain separate co-counsel.* This phrase clearly declare that the indemnified party has the right to retain at its expense separate co-counsel (Adams, 2013).

On the other hand, obligations refer to “a bond with a condition annexed, usually involving a penalty for non-fulfilment” as stated in Table 2.7. Obligations can also be defined as a tie that binds two or more parties to fulfil their duties that has been agreed. Failure in fulfilling the obligation by either parties can therefore be taken legal actions against by other.

According to Adams (2013), courts have long recognized use of “shall” as a language of obligation to state any duty that a contract imposes on one or more of the parties. For example: *Acme shall purchase the Shares from Doe.* In this case, Acme is the subject of the sentence, with the presence of “shall”, this sentence stated that Acme “has a duty” or “is obliged” to purchase the Shares from Doe (Adams, 2013). Besides, Greene (1863) explained that “shall” denotes, primarily, obligation. This obligation may be urged by the will or determination of another. Hence, “shall” denotes obligation, and implies determination and resolution at the same time (Greene, 1863). Other than that, terms such as “must”, “will”, “agrees to”, “undertakes to”, “promises to”, “covenants to”, “commits to”, “is responsible for”, “will be expected to”, also been used in a contract as an alternative to impose obligation, but these terms are not recommended by Adams (2013) due to various shortcomings.

When the clauses come with a condition, it would be confused that whether the clause is falls under rights or obligations of the party. Condition means a future and uncertain event or circumstances on which the existence of some particular legal relation depends. Conditional clauses usually modify the language of obligation, discretion, prohibition and policy. A sentence containing a conditional clause consists of the conditional clause, a subordinator, and the matrix clause. In the sentence “If *Acme has not exercised the Option*

by December 31, 2017, Smith may transfer the Shares to another Person,” the italicized portion is the conditional clause, with *If* as the subordinator; the remainder of the sentence is the matrix clause. The truth of the proposition in the matrix clause is a consequence of fulfilment of the condition in the conditional clause. In general usage, the most common subordinator is *if*, with the negative subordinator *unless* the next most common. Other subordinators include *where*, *when*, *as long as*, and *on condition that* (Adams, 2013). Thus, the classification of a clause is based on the matrix clause depends on the use of language.

From the literature, the study by UNIMAS researchers adopted quantitative approach analysis method. However, the interpretation of rights and obligations of every contracting party was based on the interpreter’s understanding, which is subjective. Hence, it is proposed to adopt the analysis method but improvised the way to interpret the contract’s contents in a more objective way, which will be discussed in Section 3.4.1.3.

By looking at past research carried out on standard forms both locally and internationally, reviewing the theory and methods used in their study, it is proposed that a set of systematic methods can be developed to study the standard form in Malaysia, via a synchronization of the previous approaches and respective identified criteria to allow analyses.

2.8.4 Form Research Methods

The above literature review of form research methods found internationally and locally, is reviewed and compared. Generally, there are three types of designs for research, namely qualitative, quantitative, and mixed method. Qualitative research is a holistic approach that involves discovery (Williams, 2007). Creswell (2009) explained that qualitative research is a means for exploring and understanding the meaning individuals or groups ascribe to a

social or human problem, while quantitative research is a means for testing objective theories by examining the relationship among variables. Mixed methods research is an approach to inquiry that combines or associates both qualitative and quantitative forms (Creswell, 2009).

Creswell (2012) further explained the major characteristics of a qualitative research and quantitative research and their differences as shown in Table 2.8:

Table 2.8: Qualitative research vs quantitative research (Creswell, 2012)

Qualitative Research	Quantitative Research
Exploring a problem and developing a detailed understanding of a central phenomenon	Describing a research problem through a description of trends or a need for an explanation of the relationship among variables
Having the literature review play a minor role but justify the problem	Providing a major role for the literature through suggesting the research questions to be asked and justifying the research problem and creating a need for the direction of the study
Stating the purpose and research questions in a general and broad way so as to the participants' experiences	Creating purpose statements, research questions, and hypotheses that are specific, narrow, measurable, and observable
Collecting data based on words from a small number of individuals so that the participants' views are obtained	Collecting numeric data from a large number of people using instruments with pre-set questions and responses
Analysing the data for description and themes using text analysis and interpreting the larger meaning of the findings	Analysing trends, comparing groups, or relating variables using statistical analysis, and interpreting results by comparing them with prior predictions and past research
Writing the report using flexible, emerging structures and evaluative criteria, and including the researchers' subjective reflexivity and bias	Writing the research report using standard, fixed structures and evaluation criteria, and taking an objective, unbiased approach

The findings from literature in Section 2.8 according to three different types of research design is summarised as follows.

- Qualitative approach: Study done by reviewing a single standard form or comparing few standard form based on the general assessment of legality of the form, usage of

terms and the apportionment of risks. Interviews and case study is conducted to support the academic analysis. Results that is presented as commentaries is heavily depending on the understanding and experience of researcher.

- Quantitative approach: Study done by conducting a questionnaire. Results obtained is analysed by using different types of regression analysis to identify the relationship of data, which the results are depending on respondent's point of view. There are also study done by conducting text-analysis on the standard form, while the results from form analysis is analysed using formula.
- Mixed method approach: Study done by conducting questionnaire survey, clause study, and interviews. Results from questionnaire is used to set the scale weightage for the analysis in clause study. Interviews is conducted to verify the results.

In a nutshell, the methods above mostly relate a personal point of view, which leads to a subjective result. Hence, this research work will adopt the quantitative approach of research by conducting text analysis on standard form. This kind of analysis with systematic and objective assessment procedures that include a pre-determined set of attributes likely to be able to provide a standard form evaluation framework not only for Malaysia but for its international counterparts too.

2.9 Summary of Chapter

This chapter gives an overview about the Malaysia's construction industry that heavily depending on the standard form of contract in every construction project. It appears that none of the construction contract in Malaysia fulfil the condition of a "good" construction contract. Furthermore, existing method to analyse the standard form is heavily dependent on researcher or respondent. Hence, it is important to establish a framework that is able to carry

out the analysis in a more objective way. This framework is target to analyse the standard form in terms of clarity, completeness and distribution of rights and obligations. Past studies of selected attributes was conducted to assist the design for form analysis. Methods chosen will discussed in next chapter.

CHAPTER 3

METHODOLOGY

3.1 General

Extensive study from literature in Chapter 2 had shown the need for a well thought out, clearly formulated framework, that includes a set of systematic methods for collecting and analysing data from the standard form itself, hence resulting a very objective outcome. This chapter presents the establishment of the evaluation framework that involves stages from modification of theory towards the mathematical data analysis.

3.2 Research Framework

This section outlines the research framework designed to accomplish the research's aim and objectives for development of theoretical and mathematical framework for standard form evaluation. It explained the procedure undertaken for conducting the research work. The framework of research is illustrated in Figure 3.1.

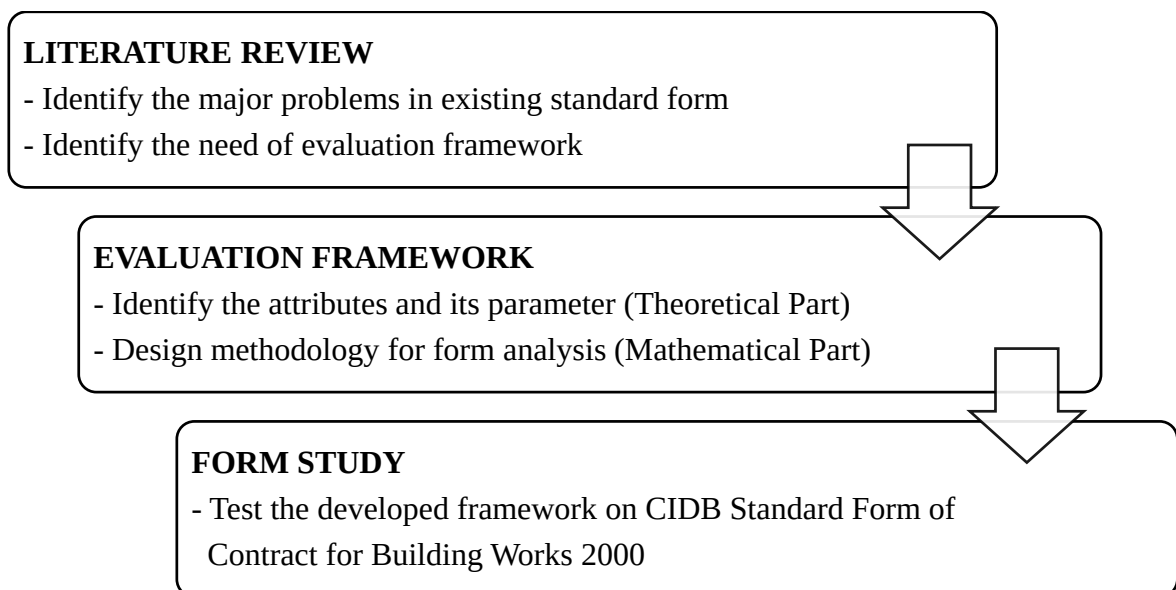


Figure 3.1: Research framework

3.3 Literature Review

Literature review that is outlined in Chapter 2 was done by reading comprehensively in existing literature related to the contractual environment. Typical information sources included academic and professional journal articles, books, conference papers, theses, and web-based resources. The background and framework for the proposed study is re-stated as the following:

- Justify the aim and objectives of this research.
- Understand the need of contract and the contractual environment in a construction project.
- Identify previous research related to standard forms in Malaysia.
- Establish the gap in knowledge areas of standard forms in Malaysia, whereby the existing measuring tools for standard forms analysis is on subjective commentary basis.
- Understand the problems and issues with the common standard forms used in Malaysia.
- Justify the attributes to be studied in standard forms.
- Identify the criteria or parameters that influence the selected attributes.
- Understand various method designed to evaluate selected attributes from previous research and justify its practicality in standard forms.

The following section focus on detailing the various components in the evaluation framework designed to fill the gap of knowledge identified in previous sections.

3.4 Evaluation Framework Development

As discussed in Section 2.8, various method from past research related to selected attributes is reviewed and compared. Among the three types of research design as discussed in Section 2.8.4, quantitative approach of research is considered in this research work.

According to Creswell (as cited in Williams, 2007), quantitative research involves the collection of data so that information can be quantified and subjected to statistical treatment in order to support or refute “alternate knowledge claims”. Typically, data collected is in numeric style and mathematical models are used as the methodology of data analysis.

A summary of the findings from literature in Section 2.8.4 shows that most of the researchers conducted clause study, interviews, or questionnaires survey to collect data for further analysis, which the results is very depending on personal’s experience and point of view. In order to address this issue, this research work adapted the idea from Rameezdeen and Rodrigo (2013, 2014) to evaluate the standard form using an objective measure. They adopted a quantitative content analysis tools in their study, where data were collected by analysing the contents in standard form. This methodology is adjusted to fit the research problems.

Accordingly, the developed framework will evaluate the standard form by measuring and analysing the contents of standard form. As discussed in Section 2.7, other than clarity, it is essential to determine the completeness and distribution of rights and obligations in a standard form. Firstly, sets of parameters related to pre-determined attributes were designed (theoretical part of framework) based on the findings from literature, followed by design of a systematic and quantitative measurement procedures (mathematical part of framework) to analyse the contents in standard form. Lastly, data obtained will give a number score for evaluation. The workflow of evaluation framework is illustrated in Figure 3.2.

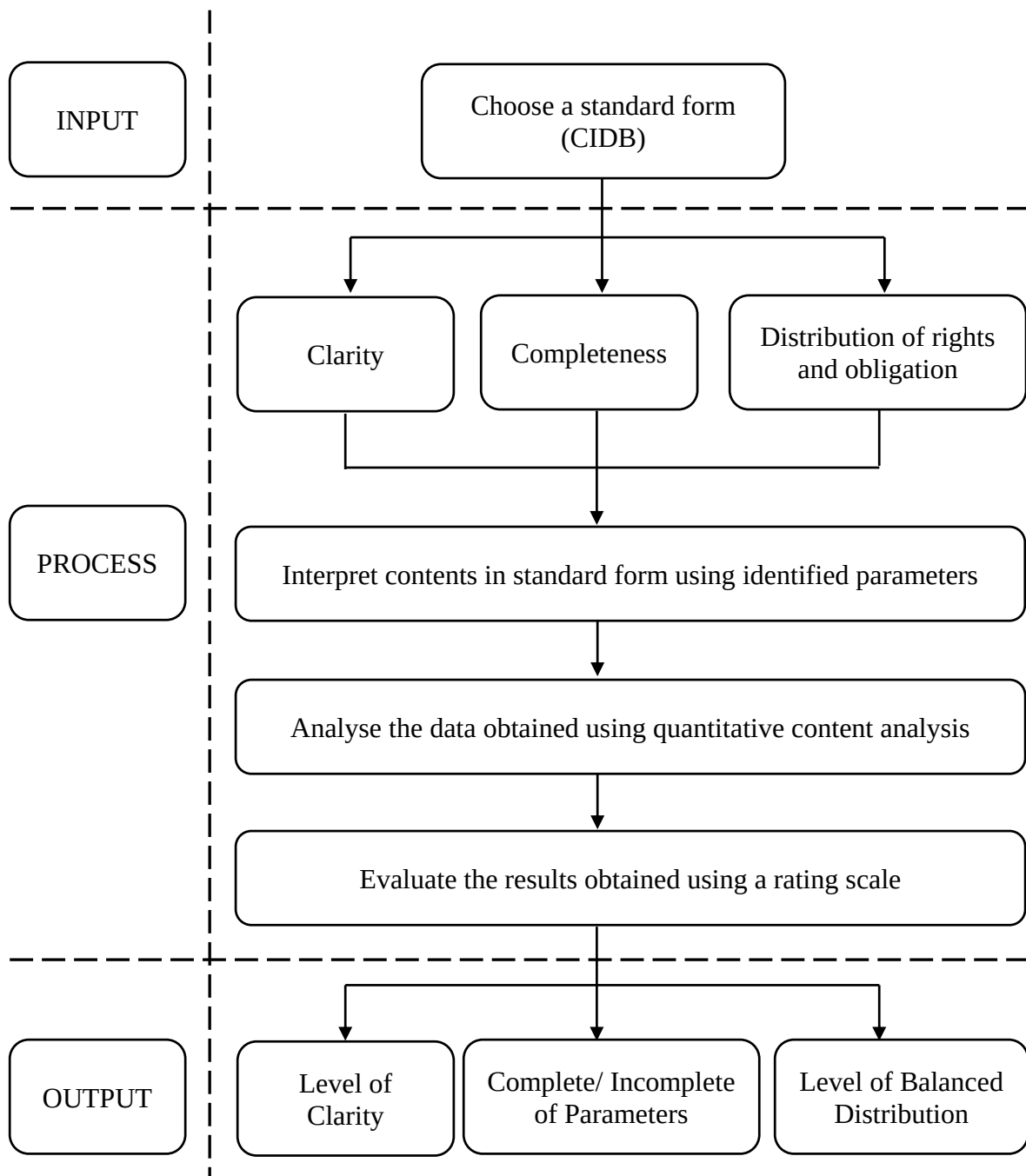


Figure 3.2: The workflow of evaluation framework

Following sections will further discuss on the parameters for pre-determined attributes, subsequently discussed on the quantitative content measurement procedures to analyse the contents in standard form.

3.4.1 Parameters of Attributes

This section involves the development of theoretical part of the framework. From extensive literature review as discussed in Section 2.6, three of the problematic characteristics of standard form are chosen as the attributes to be studied in the framework, explicitly clarity, completeness, and distribution of rights and obligation. Theory developed by various researchers as discussed thoroughly in Section 2.8 is adopted and modified to design the parameters of selected attributes for form analysis.

3.4.1.1 Clarity

For clarity, Chong and Rosli (2010) list out a summary of clarity and legalese problems in the contract clauses as shown in Table 2.2 and Table 2.3. This research adopted such problems as a guideline to stipulate clarity's parameters. However, some aspects of the problems such as complexity of noun phrases, poor words formation, etc. cannot be analysed objectively due to the subjectivity involved in determining the problem will be excluded from the parameters. Thus, an alternative objective approach is adopted to overcome issue addressed above.

According to the discussion in Section 2.8.1, Table 3.1 list out the parameters related to length of sentences, structure of sentences, and style of sentences, which these parameters is easy to be identified during the interpretation of clause.

Table 3.1: Clarifications on parameters for clarity

Parameters	Clarifications on parameters
1. Long Sentences	More than 25 words
2. Cross-reference	Other clause mentioned, e.g.: see Clause 1; pursuant to Clause 1; refer to Clause 1; etc.
3. Passive voices	Doer absent or mentioned after verb. Past principle after "to be", e.g.: is issued; were carried out; will be entitled; has been provided; etc.

Table 3.1 continued

Parameters	Clarifications on parameters
4. Negative style	Negation words, e.g.: not; no; never; n't; etc.
5. Wordiness, cliché jargon, ambiguous word	Unnecessary words; repetition words; informal words

Following the reviews from literature, past researchers have different point of view regarding to the length of sentences. Some suggested that the sentence length should be around 20 words or less, while some suggested average sentence length of 21 words with 33 syllables in a sentence, there is also recommendation of 25 words to 30 words as average sentence length. Hence, in this study, taking an average of the suggestions, sentences with more than 25 words is considered as long sentences. Besides, the sentence with cross-reference refers to sentences that include a link to another clause, for example: “see Clause 1”, “pursuant to Clause 1”, “refer to Clause 1”; etc.

Furthermore, the sentences with passive voices can be identified by the following ways:

- Sentences with the absent of doer or doer not mentioned after the verb.
- Sentences with past participle straight after the forms of “to be”. Forms of “to be” are: was, is, am, are, have been, has, will be, being, and will have been.

In addition, sentences that contain negation words such as “not”, “no”, “never”, “don’t” etc. is considered as sentences with negative style. Lastly, sentences with wordiness, cliché jargon, and ambiguous word is grouped together as one parameter because these problems were due to inappropriate usage of words. Wordiness refers to additional word used, cliché refers to overused or unnecessary words, jargon refers to special words used by particular groups or people, and ambiguous words refer to words with multiple meanings.

3.4.1.2 Completeness

The parameters for completeness is designed follow the idea by Lu, Zhang, and Zhang (2016), adopt the theory developed by Luo (2005) whereby the contract completeness is defined as a three-dimensional construct that includes the extent to which contractual terms are clearly specified (term specificity), possible contingencies are accounted for (contingency adaptability), and each party are legally bound to the contract (contractual obligatoriness). Each dimension will represents a parameter, and with a good understanding of every dimension as discussed in Section 2.8.2, sub-parameters as in Table 3.2 is designed to analyse the clause in detail.

Table 3.2: Clarifications on parameters for completeness

Parameters	Clarifications on parameters
Term Specificity: Degree to which all relevant terms and clauses specified in a contract (Luo, 2005).	
Guidelines/ Procedures	Every sentence is a guidelines/ procedures.
Time/ Cost/ Quantity	Time, cost or quantity is specified in the guidelines/ procedures.
Rights of parties	Keywords to identify the rights of parties is as shown in Table 3.3
Obligations of parties	Keywords to identify the obligations of parties is as shown in Table 3.3
Contingency adaptability: How to respond contractually to future problems, conflicts, and contingencies (Luo, 2005).	
Guidelines/ Procedures	Sentences with “if (condition) . . . , then (solution)” This is a guidelines/ procedure to respond contingencies.
Period/ Cost/ Quantity	Time, cost or quantity is specified in the guidelines/ procedures that respond to contingencies.
Alternative solutions	Few choices is given to the parties to solve the problems.

Table 3.2 continued

Contractual obligatoriness: Extent to which each party involved in a construction project is restrained by the binding force of the contract (Luo 2005).	
Applicable law	Law is specified in the guidelines/ procedures
Penalization against the breaching party	Clause to penalize the party if the party fail to comply
Protection for the aggrieved party	Clause to protect other party if a party fail to comply

According to Luo (2002), term specificity clarifies the rules and responsibilities involved in an issue. Luo (2005) further explained that term specificity codifies the rights, and responsibilities of each party, thus restraining each party from taking opportunistic action. Specifying these terms facilitates construction projects done in accordance with the contract. Transparent and accurate information such as period for action, cost for the action, quantity to be provided, and rights and obligations for each party elevates the effectiveness of cooperation between contracting parties in a project. It is noted that every sentence in a contract is a guidelines or parts of procedure.

On the other hand, contingency adaptability in a contract includes principles or guidelines pre-specifying appropriate ways, procedures, or alternatives to deal with various unpredicted situations (Luo, 2005). This dimension consists of sub-parameters that is similar to term specificity, but the procedures or guidelines under term specificity cannot re-categorised under this dimension. This dimension only involves procedures or guidelines for contingencies.

The dimension of contractual obligatoriness concerns on the extent to which contracting parties involved is restrained by the binding force (Luo, 2002b). It includes such clauses or terms as legal binding force of the overall contract (legal effectiveness of the contract, applicable law, force majeure, amendments, alternations, discharge of the contract,

and settlement of disputes), penalization against the breaching party, and protection for the aggrieved party (Luo, 2005). Without such obligatoriness, the contract is incomplete no matter how specific and inclusive the terms (Luo, 2005). When the legal consequences of breaching the contract is clearly codified, it will increase each party's sensitivity to its duties and responsibilities and thus its commitment (Luo, 2002b, 2005).

3.4.1.3 Distribution of Rights and Obligation

As for distribution of rights and obligation, a checklist containing keywords for clause identification was determined to interpret and sort the clauses into one group pertaining rights and another pertaining obligation. With a good understanding of the language of contracts and the definition of rights and obligation in Section 2.8.3, the keywords in aforementioned checklist was determined as shown in Table 3.3. These words are used with the intention to express rights and obligation during the drafting of the contract (Adams, 2013).

Table 3.3: Keywords to determine rights and obligation of a party

Rights	Obligation
may is entitled to has discretion to is permitted to is authorized to is given liberty to is given permission to	shall must will has duty to is obliged to is bound to agrees to undertakes to promises to covenants to is responsible for

Following sections will discuss on the mathematical part of the framework, which the method is designed for form analysis based on the selected attributes and parameters.

3.4.2 Quantitative Content Analysis

This section involves the development of mathematical part of the framework. From extensive literature review as discussed in Section 2.8, various methodology from past researchers were adapted to develop a systematic and objective measurement procedures to analyse the contents in standard form. Literally, data of the framework is collected from standard form by calculating the quantity of the contents that is in line with the parameters and sub-parameters as designed in previous section. Subsequently, collected data will be grouped by clause for further analysis and evaluation.

3.4.2.1 Template for form analysis

Generally, the standard form will be analysed in paragraph according to the layout of a standard form. Every paragraph is interpreted and checked whether the paragraph is in line with the parameters or sub-parameters. In order to display obtained data in structured format, table is used to organise the data in rows and columns. The number of rows and columns in the table is determined by the number of paragraphs in a standard form and the number of parameters or sub-parameters. Hence, an Excel sheet is designed as a template to analyse the standard form in paragraph.

Microsoft Excel is widely used by researchers to display or compute data. The top features and benefits of Microsoft Excel is summarised as follows (Paolo Lenotti, 2014).

- Build great charts: Data is inserted into individual cells in rows or columns, allowing it to be sorted and filtered, or displayed in a visual presentation such as pie charts or graph. Formulas can be applied across a grid of cells to analyse or compute the data.
- Use conditional formatting: Spreadsheets can be formatted using different colours, bolds and italics, to differentiate between columns and bring the most important data to the fore. Vast number of tasks can be achieved such as: display simple icons that represent related data, highlighting a row based on a single value, comparing values, comparing lists, and finding duplicates etc.
- Help identify trends: Key trends emerging from the information can be presented in a straightforward manner using average lines. Trend lines can also be extended beyond the graph to offer predictions of future activity.
- Bring data together: Information from various files and documents can placed together, so that it exists in a single location. As well as raw data and information from other spreadsheets, it is possible to import text and images. Other objects can be added using the Insert tab, or additional spreadsheets can be added to the file.
- Online access: Excel is available online as part of Microsoft's Office 365 productivity suite, which means that users can have access to the program from a range of devices, from almost any location.

As illustrated in Figure 3.3, every paragraph in the standard form is sorted into every rows of Column B. The numbering of the clause is extracted and put in Column A. While, top row (Row 1), from Column C onwards, represents the relevant parameters or sub-parameters depending on each attribute. This template will be used for analysis of every attribute, by changing the elements in top row. Paragraph that meets the parameter will obtain a number score and it will be put into intersection cell of respective row and column.

	A	B	C	D	E	F	G
1			1st Parameter	2nd Parameter	3rd Parameter	4th Parameter	5th Parameter
2		2 SUPERINTENDING OFFICER AND SUPERINTENDING OFFICER'S REPRESENTATIVE					
3		2.1 Superintending Officer's Duties and Authority					
4	(a)	The duties and authority of the Superintending Officer shall be those stated in or necessarily to be implied from the Contract.					
5		Limitations (if any) on the authority of the Superintending Officer are set out in the Appendix.					
6	(b)	Except where expressly stated in the Contract, the Superintending Officer shall have no authority to relieve the Contractor of any of his obligations under the Contract.					
7	(c)	The Superintending Officer shall act reasonably and timeously in carrying out all or any of his duties under the Contract.					
8		2.2 Superintending Officer's Representatives					
9	(a)	The Employer or Superintending Officer may from time to time appoint such number of Superintending Officer's Representatives as he deems fit.					

Figure 3.3: Template for form analysis using Microsoft Excel

3.4.2.2 Analysis method of Attributes

Upon the completion of interpretation for every paragraph based on the pre-determined attributes and its parameters in Section 3.4.1, a set of numeric data will be obtained. These numeric data will be analysed clause by clause, using designated formula depends on the attribute.

The analysis for clarity adapted the methodology used in a typical marking scheme for exam papers whereby the results is computed in terms of ratio. In mathematics, ratios are used to compare amounts or quantities or describe a relationship between two amounts or quantities. Ratio can be calculated by dividing a number with another number. In this research, the number of sentences that is in line with the parameter is summed up by clause at first, subsequently divided by the total number of sentences in a clause to obtain the ratio of the parameter. The formula for this ratio is as shown as (1).

After that, average ratio as shown as (2) obtained for five parameters in a clause is used to evaluate the level of clarity of a clause in standard form. It is noted that the average ratio obtained range from 0 to 1.

Ratio of the parameter

$$= \frac{\text{No. of sentences in line with the parameter in a clause}}{\text{Total number of sentences in a clause}} \quad (1)$$

$$\text{Average ratio} = \frac{\text{Sum of ratio obtained by parameters of clarity}}{5} \quad (2)$$

On the other hand, the analysis of completeness is straightforward and did not involve any number scores or calculation. Every standard form is deemed a complete standard form before publication, while any incomplete part indicates an incomplete standard form. Hence, it is not logic to measure the level of completeness of a standard form using a ratio. In this research, the analysis of completeness is to determine the parameters or sub-parameters that constitute to incomplete standard form. Thus, incomplete in any sub-parameters of a clause denotes incomplete parameter for the particular clause.

The analysis for distribution of rights and obligation adapted the methodology from study by Ng (2014), Sharon (2014), and Siaw (2014) whereby minimum ratio method is used to evaluate the clause. After sorting out the rights and obligation for each contracting party using the keywords in Table 3.3, the number of rights and the number of obligation in a clause is summed up to compute its minimum ratio. Minimum Ratio, R_{min} for each clause as shown in (3), refer to two types of ratio, ratio of number of rights to number of obligation and vice versa, whereby the ratio with smaller value will be chosen as the minimum ratio. It is noted that the minimum ratio obtained will range from 0 to 1.

$$R_{min} = \text{Min} \left(\frac{\text{No. of rights, R}}{\text{No. of obligation, O}}, \frac{\text{No. of obligation, O}}{\text{No. of rights, R}} \right) \quad (3)$$

Where, R_{min} = Minimum ratio

3.4.3 Likert-type scale

Upon the completion of ratio calculation, the researcher has to evaluate each clause with respect to ratio obtained by each attribute. As reviewed from literature, Likert scale often used by researchers to appraise the magnitude of the attributes with the statement on a five-point scale or seven-point scale, which the options for positive and negative statement are balanced. In this research, a five-point scale is used to evaluate the results. Since above calculation method will obtained a result range from 0 to 1, hence the Likert scale is rated evenly as in Table 3.4 or vice versa.

Table 3.4: Ratio classification

Scale Range	Rating
$0.0 \leq \text{Ratio} < 0.2$	Very Negative
$0.2 \leq \text{Ratio} < 0.4$	Negative
$0.4 \leq \text{Ratio} < 0.6$	Neutral
$0.6 \leq \text{Ratio} < 0.8$	Positive
$0.8 \leq \text{Ratio} \leq 1.0$	Very Positive

3.5 Framework Validation

Upon the completion of development of evaluation framework, is it important to verify the effectiveness of the framework by conducting a framework validation. It is a process of measuring the properties or performance of framework by applying the framework on existing standard form.

The framework validation is expected to achieve few purposes as stated in the following:

- To assess the effectiveness of the framework to recognise the lacking in the standard form
- To identify the weakness of the framework at every stage

- To evaluate the validity of designed theory and designed methods for measurement
- To identify the potential ways to improve the framework

In this research, CIDB Standard Forms of Contracts in Building Works 2000 (CIDB 2000) is selected for the testing. CIDB 2000 is established by Construction Industry Development Board Malaysia (CIDB), which is a statutory body under minister of works, Malaysia. The body is established in July 1994 to coordinate all activities in the construction industry and increase its competitiveness. In year 1997, the CIDB entrusted with the responsibility to address pertinent issues and problems faced by the industry nowadays, a drafting committee was established to produce the CIDB Standard Form. By the year 2000, CIDB Standard Form of Contract for Building Works was firstly published as an alternative to newly issued PAM98 (Chan, 2006). This is first of the series of construction contracts that published by CIDB which generally used in private building construction. This form contains 51 clauses and 6 optional modules that able to covers all necessary aspects in building contract. These optional modules are provided to cater for different situations or requirements of a particular contract. The CIDB 2000 Forms contains options of either contracts based on drawings and specifications, or for contracts based on Bills of Quantities.

3.6 Summary of Chapter

This chapter discussed on every element in the research framework that contributes to the development of theoretical and mathematical framework for evaluation of standard form. Extensive literature is reviewed to gain understanding on the theory related to the attributes in the framework. Other than that, various methodologies also reviewed and compared to adapt a suitable methodology for this research. As a result, a set of attributes with relevant

parameters and mathematical measure procedures for each attribute is designed for the development of framework that is systematic, objective, and repeatable for every clause. Next chapter will put forward the developed evaluation framework and all the results and findings of analytical works carried out using the methods described in this chapter.

CHAPTER 4

RESULTS AND DATA ANALYSIS

4.1 General

This chapter presents the developed framework for form evaluation. The framework comprises a series of analysing method for three selected attributes alongside developed and determined parameters that is structured and repeatable for clauses. Upon the completion of analysis, a number score will be obtained for form evaluation. Furthermore, the chapter also presents the results and detailed findings from the form-analysis carried out for CIDB 2000. An example of analysis of a clause with respect to each attributes of evaluation is provided in appendix. While the CIDB Standard Forms of Contracts in Building Works 2000 is obtained from CIDB official website (<http://www.cidb.gov.my/>).

4.2 Framework for Form Analysis

This framework will analyse the form in three attributes, namely clarity, completeness, and distribution of rights and obligations. Following sub-section will explain in detail on how the framework works to analyse the CIDB 2000 clauses by clauses. All the data in Section 4.2 is an example for explanation. An example set of analysis of a clause with respect to each attributes of evaluation is provided in appendix.

4.2.1 Clarity

The analysis of clarity is based on the parameters as shown in Table 3.1. By using the excel sheet provided in Chapter 3, every cell at the top row will represents a parameter of

clarity. Number of sentences in a paragraph that meet the parameters will be calculated and tabulated into a table as shown in Table 4.1.

Table 4.1: Paragraph analysis for clarity

Clause	Long sentence	Cross-reference	Passive Voice	Negative Style	Wordiness, cliché jargon
1 st Paragraph	1	1	0	0	0
2 nd Paragraph	2	1	0	0	0
3 rd Paragraph	0	0	1	1	0
4 th Paragraph	1	0	0	0	0

Taking the column with long sentences as an example, according to Table 3.1 (page 66), long sentences refers to sentences that is more than 25 words. Hence, if 1st paragraph has one sentence with more than 25 words, then “1” will be key into the intersection cell of “Long Sentences” and “1st Paragraph”. Similarly, if 2nd paragraph has two sentences with more than 25 words, then “2” will be key into the intersection cell of “Long Sentences” and “2nd Paragraph”. Similar calculation method is applied to the calculation for other parameter. Upon completion of analysis for each paragraph, the number of sentences for each parameter will be summed by clause and the results will be tabulated into a table as shown in Table 4.2. The ratio for each parameter is obtained by dividing the number of sentences by the total number of sentences in a clause.

Table 4.2: Results of clarity for each clause

Total number of sentences: 7

Parameters	No. of sentences	Ratio
1. Sentences with more than 25 words	4	0.57
2. Sentences with cross-reference	2	0.29
3. Sentences with passive voices	1	0.14
4. Sentences with negative style	1	0.14
5. Sentences with wordiness, cliché jargon	0	0.00
Average ratio		0.23

The rating of clarity of the clause will be described with reference to the clause's average ratio, as categorized as shown in Table 4.3.

Table 4.3: Ratio classification for clarity

Scale Range	Rating of Clarity
$0.0 \leq \text{Average Ratio} \leq 0.2$	Very Clear
$0.2 < \text{Average Ratio} \leq 0.4$	Quite Clear
$0.4 < \text{Average Ratio} \leq 0.6$	Clear
$0.6 < \text{Average Ratio} \leq 0.8$	Unclear
$0.8 < \text{Average Ratio} \leq 1.0$	Very Unclear

Following the example given, the example clause is rated as a “Quite Clear” clause with an average ratio of 0.23. Upon the completion of analysis of clarity for every clause, all the results will be summarized and tabulated into a table as shown in Table 4.4 for further discussion.

Table 4.4: Overall clarity

Clause	Average Ratio	Ratio Classification
Clause 1	0.16	Very Clear
Clause 2	0.23	Quite Clear
Clause 3	0.46	Clear
Clause 4	0.25	Quite Clear
Clause 5	0.30	Quite Clear
⋮	⋮	⋮
Overall Ratio	0.36	Quite Clear

4.2.2 Completeness

The analysis of completeness is based on the parameters as shown in Table 3.2 (page 68). Since this attribute includes three main parameters with few sub-parameters, thus the analysis will be conducted in three parts, namely term specificity, contingencies adaptability, and contractual obligatoriness. By using the excel sheet provided in Section 3.4.2.1, every

cell at the top row will represents a sub-parameter. Sentences in a paragraph that meet the parameters will be categorized and tabulated into a table as shown in Table 4.5, Table 4.6, and Table 4.7.

Table 4.5: Paragraph analysis for term specificity

Clause	Term specificity			
	Guidelines/ Procedures	Period/ Cost/ Quantity	Rights of parties	Obligations of parties
1 st Paragraph	Sentence	Period	-	All Party
2 nd Paragraph	-	-	All Party	-

If the procedure or guideline is explaining what the term means, what to do or what should not do, the sentence is categorized under procedure or guideline in term specificity. The column for “Period/ Cost/ Quantity” is to fill in the specific time or amount mentioned in the paragraph. If the paragraph did mention the rights and obligation of related party, then the name of the party will be written in the cell.

Table 4.6: Paragraph analysis for contingency adaptability

Clause	Contingency adaptability		
	Guidelines/ Procedures	Period/ Cost/ Quantity	Alternative solutions
1 st Paragraph	-	-	-
2 nd Paragraph	Sentence	No Period	-

If the procedure or guideline is explaining how to handle contingencies, the sentence is categorized under procedure or guideline for contingency adaptability. If alternative solution is given in the paragraph, it is categorized under “Alternative solutions”. The column for “Period/ Cost/ Quantity” is to fill in the specific time or amount mentioned in the paragraph.

Table 4.7: Paragraph analysis for contractual obligatoriness

Clause	Contractual obligatoriness		
	Applicable law	Penalization against the breaching party	Protection for the aggrieved party
1 st Paragraph	-	Contractor	-
2 nd Paragraph	-	-	No

Any laws and regulations mentioned in the paragraph will be listed under “Applicable law”. If the paragraph is to protect or penalize the party, then the name of the party will be written in the cell under “Penalization against breaching party” or/ and “Protection for aggrieved party”.

If the paragraph fails to give any information that is necessary, then “No” will be placed in the cell of respective sub-parameter. If the paragraph is not applicable for the sub-parameter, “-” is used to denote the “Not Applicable” relation. Upon completion of analysis for each paragraph, the results obtained for each parameter will be gathered by clause and will be tabulated into a table as shown in Table 4.8.

Table 4.8: Results of completeness for each clause

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Rights of parties	Complete
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Incomplete
Alternative solutions	Not Applicable

Table 4.8 continued

Contractual obligatoriness	
Applicable law	Not Applicable
Penalization against the breaching party	Complete
Protection for the aggrieved party	Incomplete

Parameter with all its sub-parameters completed is categorised as complete parameter, while for parameter with a “No” under any of its sub-parameter, it is an incomplete parameter. Not applicable parameter or sub-parameters will not affect the completeness of a clause. Following the example given, the example clause is evaluated to be complete in term specificity, but incomplete in contingency adaptability and contractual obligatoriness. Upon the completion of analysis of clarity for every clause, all the results will be summarized and tabulated into a table as shown in Table 4.9 for further discussion.

Table 4.9: Overall completeness

Clause	Completeness		
	Term Specificity	Contingencies Adaptability	Contractual Obligatoriness
Clause 1	-	-	-
Clause 2	-	-	-
Clause 3	-	-	-
Clause 4	-	-	-
⋮	⋮	⋮	⋮
Overall Completeness	-	-	-

4.2.3 Distribution of Rights and Obligation

The analysis of distribution of rights and obligation is based on the keywords as shown in Table 3.3 (page 70). By using the excel sheet provided in Section 3.4.2.1, every cell at the top row will represents rights and obligation of each contracting party. The rights and

obligation for each contracting party will first be listed out and tabulated into Table 4.10. If the sentence contains keywords pertaining rights, then the sentence is sorted into column under “R” of the respecting party. If the sentence contains keywords pertaining obligation, then the sentence is sorted into column under “O” of the respecting party.

Table 4.10: Paragraph analysis for distribution of rights and obligations

Clause	Employer		Contractor		Superintending Officer	
	R	O	R	O	R	O
1 st Paragraph	May...	-	-	Shall...	-	-
2 nd Paragraph	-	-	Entitled...	Shall...	May...	Shall...
3 rd Paragraph	-	-	-	Must... Shall...	May...	-

Upon the completion of sorting out the sentences, the total number of rights and obligation for each clause is calculated and tabulated into Table 4.11.

Table 4.11: Results of distribution of rights and obligation for each clause

	Employer	Contractor	S.O.
Rights, R	1	1	2
Obligations, O	0	4	1
R/O	Undefined, ∞	0.25	2.00
O/R	0.00	4.00	0.50
Min (R/O, O/R)	0.00	0.25	0.50
Ratio Classification	Very Unbalanced	Unbalanced	Balanced

The sum of rights and obligation for each contracting party are used as data to compute the minimum ratio, R for each clause as shown in following equation.

$$R_{min} = \min \left(\frac{\text{No. of rights, R}}{\text{No. of obligation, O}}, \frac{\text{No. of obligation, O}}{\text{No. of rights, R}} \right) \quad (3)$$

Where, R_{min} = Minimum ratio

“R/O” ratio as stated in Table 4.11 is obtained by dividing the number of rights by number of obligations, while “O/R” ratio is the opposite way of calculation, obtained by dividing the number of obligation by number of rights. The ratio with smaller value will be chosen as the minimum ratio ($R_{\min}$). If the calculation ends up with undefined answer, another value is deemed to be the minimum ratio. If both “R/O” and “O/R” obtained undefined ratio, the contracting party will be excluded from the study of the particular clause, which the result is written as “Not Applicable”.

The rating of distribution of rights and obligation of the clause will be described with reference to the clause’s minimum ratio, as categorized into a table according to the range of minimum ratio as shown in Table 4.12.

Table 4.12: Ratio classification for distribution of rights and obligations

Scale Range	Rating
$0.0 \leq R_{\min} < 0.2$	Very Unbalance
$0.2 \leq R_{\min} < 0.4$	Unbalance
$0.4 \leq R_{\min} < 0.6$	Balance
$0.6 \leq R_{\min} < 0.8$	Good Balance
$0.8 \leq R_{\min} \leq 1.0$	Very Good Balance
$R_{\min} = \text{Undefined}, \infty$	Not Applicable

Following the example given, the employer obtained a “Very Unbalanced” distribution, while the contractor has an “Unbalanced” distribution, and Superintending officer has a “Balanced” distribution of rights and obligation in this clause. Upon the completion of analysis of distribution of rights and obligation for every clause, all the results will be summarized and tabulated into Table 4.13 for further discussion. The total number of rights and obligation obtained from the standard form is calculated and evaluated using the minimum ratio method as aforementioned.

Table 4.13: Overall distribution of rights and obligations

Clause	Employer		Contractor		S. O.	
	R	O	R	O	R	O
Clause 1	1	0	1	4	2	1
Clause 2	3	0	1	5	3	3
Clause 3	0	3	1	9	3	5
Clause 4	0	0	1	3	1	2
Clause 5	0	4	0	0	0	0
⋮	⋮	⋮	⋮	⋮	⋮	⋮
Total	52	21	50	200	65	100

4.2.4 Form Study

The developed framework will be tested on selected standard forms, explicitly CIDB Standard Forms of Contracts in Building Works 2000 upon completion. This form includes 51 clauses and 6 optional modules as stated below.

(a) Main Clauses

Clause 1: Definitions and Interpretation

Clause 2: Superintending Officer and Superintending Officer's Representative

Clause 3: Superintending Officer's Instructions

Clause 4: Contract Documents

Clause 5: Works Programme and Method Statement

Clause 6: General Obligations of the Employer

Clause 7: General Obligations of the Contractor

Clause 8: Notices

Clause 9: Patent Rights, Trademarks, Royalties

Clause 10: Compliance with Statutes, Regulations

Clause 11: Environmental Matters

Clause 12: Setting Out

Clause 13: Site Administration

Clause 14: Safety at the Site

Clause 15: Quality in Construction

Clause 16: Labour

Clause 17: Commencement of Works and Possession of Site

Clause 18: Other Contractors

Clause 19: Suspension

Clause 20: Time for Completion

Clause 21: Test on Completion

Clause 22: Sectional Completion

Clause 23: Partial Occupation by the Employer

Clause 24: Delay and Extension of Time

Clause 25: Expediting Progress of Works

Clause 26: Non-Completion and Damages for Delay in Completion

Clause 27: Defects Liability after Completion

Clause 28: Variations

Clause 29: Valuation of Variations

Clause 30: Measurement

Clause 31: Claims for Loss and Expense

Clause 32: Procedure for Claims

Clause 33: Construction Plant, Temporary Works, Materials and Goods

Clause 34: General Responsibilities

Clause 35: Indemnity Provisions

Clause 36: Insurance for Personal Injury and Property Damage

Clause 37: Insurance for Workmen

Clause 38: Insurance of the Works

Clause 38a: Insurance of the Works – By the Contractor

Clause 38b: Insurance of the Works – By the Employer

Clause 38c: Insurance of Existing Building or Structure - By the Employer

Clause 39: Antiquities and Fossils

Clause 40: Assignment and Sub-Contracting

Clause 41: Prime Cost and Provisional Sums

Clause 42: Payment

Clause 43: Effect of Superintending Officer's Certificate

Clause 44: Determination by Employer

Clause 45: Determination by the Contractor

Clause 46: Termination without Default

Clause 47: Settlement of Disputes

Clause 48: Recovery by the Employer

Clause 49: Governing Law

Clause 50: Taxes and Duties

Clause 51: Miscellaneous Provisions

(b) Optional Modules

Optional Module A: Bills of Quantities

Optional Module B: Unfixed Equipment Materials or Goods Stored Off Site

Optional Module C: Nominated Sub-Contractors and/or Nominated Suppliers

Optional Module D: Works Designed by the Contractor

Optional Module E: Payment Bond

Optional Module F: Performance Security Deposit

Results obtained from form analysis will countercheck with the reviews from previous research to verify the effectiveness of the developed framework. Following section onwards put forward the results and findings of each clause.

4.3 Clause 1: Definitions and Interpretation

4.3.1 Clause Description

Clause 1 provides a list of definition of words and expressions that is used throughout CIDB Form of Contract and this definition shall correspondingly be used as such in all other contract documents.

4.3.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.14.

Table 4.14: Clarity for Clause 1

Total number of sentences: 94

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	4	0.04
Sentences with cross-reference	21	0.22
Sentences with passive voices	12	0.13
Sentences with negative style	14	0.15
Sentences with wordiness, cliché jargon	0	0.00
Average ratio		0.11 (Very Clear)

Clause 1 has highest ratio on sentences with cross-reference, which is 0.22 among a total of 94 sentences. The ratio for other parameters are even lower, which means that this clause easy to read, and easy to understand. Thus, with an average ratio of 0.11, this clause is categorised as “Very Clear”.

4.3.3 Clause Analysis – Completeness

Clause 1 only provide the definition for specific terms. Since there is no guidelines or procedure nor rights and obligations provided, this clause will be excluded from this study.

4.3.4 Clause Analysis – Distribution of Rights and Obligations

Clause 1 only provide the definition for specific terms. Since the rights and obligation of each contracting party are not stated, this clause will be excluded from this study.

4.4 Clause 2: Superintending Officer and Superintending Officer’s Representative

4.4.1 Clause Description

Clause 2 consists of four sub-clauses that defines the duties and authority of a S.O. and his/her representatives in this contract. Any such delegation and revocation of S.O.’s representatives and assistants shall notify the contractor in writing.

4.4.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.15.

Table 4.15: Clarity for Clause 2

Total number of sentences: 17

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	10	0.59
Sentences with cross-reference	3	0.18
Sentences with passive voices	5	0.29
Sentences with negative style	6	0.35
Sentences with wordiness, cliché jargon	0	0.00
Average ratio		0.28 (Quite Clear)

Clause 2 has quite high ratio on sentences more than 25 words. However, the ratio for other parameters are very low. Thus, with an average ratio of 0.28, this clause is categorised as “Very Clear”.

4.4.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.16.

Table 4.16: Completeness for Clause 2

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Rights of parties	Complete
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Incomplete
Alternative solutions	Complete
Contractual obligatoriness	
Applicable law	Not Applicable
Penalization against the breaching party	Not Applicable
Protection for the aggrieved party	Complete

Clause 2 is complete for term specificity. It provides relevant guidelines or procedure, specific period and the rights and obligation of relevant parties. However, it is incomplete for contingency adaptability. It did not provide specific period for the S.O. to revoke his delegation. This clause is complete for contractual obligatoriness. There is no applicable law stated, no penalization for breaching party but it provides provisions to protect the aggrieved party.

4.4.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis will be done based on the employer, contractor, and S.O. in terms of rights and obligations.

Table 4.17: Distribution of rights and obligations for Clause 2

	Employer	Contractor	S.O.
Rights, R	1	1	5
Obligations, O	0	1	4
R/O	Undefined, ∞	1.00	1.25
O/R	0.00	1.00	0.80
Min (R/O, O/R)	0.00	1.00	0.80
Ratio Classification	Very Unbalanced	Very Good Balanced	Very Good Balanced

Based on the ratio calculated for Clause 2, the minimum ratio obtained for Employer is 0, while for Contractor and S.O. is 1.00 and 0.80 respectively. Thus, the distribution of rights and obligations for Employer is classify under “Very Unbalanced”, while Contractor and S.O. has a “Very Good Balanced” ratio of rights and obligations.

4.5 Clause 3: Superintending Officer's Instructions

4.5.1 Clause Description

Clause 3 consists of five sub-clauses, which covers the compliance with the S.O.'s instructions, provisions empowering instructions, instructions to be in writing, instructions to nominated sub-contractor or nominated supplier and urgent repairs.

4.5.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.18.

Table 4.18: Clarity for Clause 3

Total number of sentences: 13

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	11	0.85
Sentences with cross-reference	4	0.31
Sentences with passive voices	0	0.00
Sentences with negative style	5	0.38
Sentences with wordiness, cliché jargon	0	0.00
Average ratio		0.31 (Quite Clear)

Clause 3 has very high ratio on sentences more than 25 words. However, the ratio for other parameters are very low. Thus, with an average ratio of 0.31, this clause is categorised as “Quite Clear”.

4.5.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.19.

Table 4.19: Completeness for Clause 3

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Rights of parties	Complete
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Incomplete
Period/ Cost/ Quantity	Incomplete
Alternative solutions	Not Applicable
Contractual obligatoriness	
Applicable law	Not Applicable
Penalization against the breaching party	Complete
Protection for the aggrieved party	Complete

Clause 3 is complete for term specificity, but incomplete for contingency adaptability. It did not provide guidelines to handle such contingencies as if S.O. did not comply or respond with Contractor's request to empower the provisions. This clause is complete for contractual obligatoriness. There is no applicable law stated, but it provides provisions to penalise breaching party and provisions to protect the aggrieved party.

4.5.4 Clause Analysis – Distribution of Rights and Obligations

Analysis as shown in Table 4.20 will be done based on the employer, contractor, and S.O. in terms of rights and obligations. Based on the ratio calculated for Clause 3, the minimum ratio obtained for Employer, Contractor, and S.O. is 0.00, 0.20 and 1.00 respectively. Thus, the distribution of rights and obligations for Employer classify under "Very Unbalanced", while for contractor, the ratio is "Unbalanced" and S.O. have a "Very Good Balanced" ratio of rights and obligations.

Table 4.20: Distribution of rights and obligations for Clause 3

	Employer	Contractor	S.O.
Rights, R	3	1	3
Obligations, O	0	5	3
R/O	Undefined, ∞	0.20	1.00
O/R	0.00	5.00	1.00
Min (R/O, O/R)	0.00	0.20	1.00
Ratio Classification	Very Unbalanced	Unbalanced	Very Good Balanced

4.6 Clause 4: Contract Documents

4.6.1 Clause Description

Clause 4 consists of ten sub-clauses that explains the mutual explanatory and priority of documents in the interpretation of Contract Documents. Moreover, the responsibility of each contracting party on the Contract Documents also clarified in this clause.

4.6.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.21.

Table 4.21: Clarity for Clause 4

Total number of sentences: 34

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	12	0.35
Sentences with cross-reference	8	0.24
Sentences with passive voices	4	0.12
Sentences with negative style	10	0.29
Sentences with wordiness, cliché jargon	1	0.03
Average ratio		0.21 (Quite Clear)

Clause 4 has higher ratio on sentences with more than 25 words, followed by sentences with negative style and cross-referencing. However, the ratio for other parameters are quite low. Thus, with an average ratio of 0.21, this clause is categorised as “Quite Clear”.

4.6.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.22.

Table 4.22: Completeness for Clause 4

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Rights of parties	Complete
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Alternative solutions	Not Applicable
Contractual obligatoriness	
Applicable law	Not Applicable
Penalization against the breaching party	Not Applicable
Protection for the aggrieved party	Complete

Clause 4 is complete for term specificity, contingency adaptability, and contractual obligatoriness. It provides relevant guidelines or procedure, specific period and the rights and obligation of relevant parties. There is no alternatives solution and applicable law stated, no penalization against breaching party but it provides provisions to protect the aggrieved party.

4.6.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis will be done based on the employer, contractor, and S.O. in terms of rights and obligations.

Table 4.23: Distribution of rights and obligations for Clause 4

	Employer	Contractor	S.O.
Rights, R	0	1	3
Obligations, O	3	9	5
R/O	0.00	0.11	0.60
O/R	Undefined, ∞	9.00	1.67
Min (R/O, O/R)	0.00	0.11	0.60
Ratio Classification	Very Unbalanced	Very Unbalanced	Good Balanced

Based on the ratio calculated for Clause 4, the minimum ratio obtained for Employer, Contractor, and S.O. is 0.00, 0.11 and 0.60 respectively. Thus, the distribution of rights and obligations for Employer and the Contractor are classified under “Very Unbalanced”, while S.O. have a “Good Balanced” ratio of rights and obligations.

4.7 Clause 5: Work Programme and Method Statement

4.7.1 Clause Description

Clause 5 consists of six sub-clauses that cover the submission and approval of Works Programme and Method Statement. Furthermore, this clause also deals with the issues about start of work without approval and modification or revision to Works Programme and/or Method Statement.

4.7.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.24.

Table 4.24: Clarity for Clause 5

Total number of sentences: 14

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	9	0.64
Sentences with cross-reference	1	0.07
Sentences with passive voices	3	0.21
Sentences with negative style	5	0.36
Sentences with wordiness, cliché jargon	0	0.00
Average ratio		0.26 (Quite Clear)

Clause 5 has very high ratio on sentences with more than 25 words. However, the ratio for other parameters are very low. Thus, with an average ratio of 0.26, this clause is categorised as “Quite Clear”.

4.7.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.25.

Table 4.25: Completeness for Clause 5

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Rights of parties	Complete
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Incomplete
Period/ Cost/ Quantity	Incomplete
Alternative solutions	Not Applicable

Table 4.25 continued

Contractual obligatoriness	
Applicable law	Not Applicable
Penalization against the breaching party	Not Applicable
Protection for the aggrieved party	Complete

Clause 5 is complete for term specificity, contingency adaptability, and contractual obligatoriness. It provides relevant guidelines or procedure, specific period and the rights and obligation of relevant parties. There is no alternatives solution and applicable law stated, no penalization against breaching party but it provides provisions to protect the aggrieved party.

4.7.4 Clause Analysis – Distribution of Rights and Obligations

Analysis in Table 4.26 is done based on the employer, contractor, and S.O. in terms of rights and obligations. Based on the ratio calculated for Clause 5, the minimum ratio obtained for Contractor and S.O. is 0.33 and 0.50 respectively. Thus, the distribution of rights and obligations for Contractor is classify “Unbalanced” while S.O. have a “Balanced” ratio of rights and obligations. This clause is not applicable in the study of the distribution of rights and obligations for Employer since he has no rights and no obligations under this clause.

Table 4.26: Distribution of rights and obligations for Clause 5

	Employer	Contractor	S.O.
Rights, R	0	1	1
Obligations, O	0	3	2
R/O	Undefined, ∞	0.33	0.50
O/R	Undefined, ∞	3.00	2.00
Min (R/O, O/R)	Undefined, ∞	0.33	0.50
Ratio Classification	Not Applicable	Unbalanced	Balanced

4.8 Clause 6: General Obligations of the Employer

4.8.1 Clause Description

Clause 6 consists of one sub-clause that clarifies the general responsibilities of the Employer.

4.8.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.27.

Table 4.27: Clarity for Clause 6

Total number of sentences: 6

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	2	0.33
Sentences with cross-reference	2	0.33
Sentences with passive voices	1	0.17
Sentences with negative style	2	0.33
Sentences with wordiness, cliché jargon	1	0.17
Average ratio		0.27 (Quite Clear)

Clause 6 has same ratio on sentences with more than 25 words, sentences with negative style and sentences with cross-reference. Cross-references in this clause are used to relate the obligations of Employer mentioned in other clause, while negation words are used to state the prohibition of Employer. With an average ratio of 0.27, this clause is categorised as “Quite Clear”.

4.8.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.28. Clause 6 is complete for term specificity, but incomplete for contingency adaptability. It did not

provide guidelines to handle such contingencies as if Employer interfere the performance by Contractor or issuance of certificate by S.O. under Contract. Besides, this clause is incomplete for contractual obligatoriness since there is no penalization against breaching party to constrain the Employer from aforementioned situation.

Table 4.28: Completeness for Clause 6

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Rights of parties	Not Applicable
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Incomplete
Period/ Cost/ Quantity	Not Applicable
Alternative solutions	Not Applicable
Contractual obligatoriness	
Applicable law	Not Applicable
Penalization against the breaching party	Incomplete
Protection for the aggrieved party	Complete

4.8.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis will be done based on the employer, contractor, and S.O. in terms of rights and obligations.

Table 4.29: Distribution of rights and obligations for Clause 6

	Employer	Contractor	S.O.
Rights, R	0	0	0
Obligations, O	4	0	0
R/O	0.00	Undefined, ∞	Undefined, ∞
O/R	Undefined, ∞	Undefined, ∞	Undefined, ∞
Min (R/O, O/R)	0.00	Undefined, ∞	Undefined, ∞
Ratio Classification	Very Unbalanced	Not Applicable	Not Applicable

Based on the ratio calculated for Clause 6, the minimum ratio obtained for Employer is 0 which the distribution of rights and obligations is classify under “Very Unbalanced”. This clause is not applicable in the study of the distribution of rights and obligations for Contractor and S.O. since they have no rights and no obligations under this clause.

4.9 Clause 7: General Obligations of the Contractor

4.9.1 Clause Description

Clause 7 consists of five sub-clauses which clarifies the general responsibilities of the Contractor which including the site operations and their methods of constructions. Other than that, actions to be taken due to any discrepancy and variation and, sufficiency of contract sum are explained in this clause.

4.9.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.30.

Table 4.30: Clarity for Clause 7

Total number of sentences: 10

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	8	0.80
Sentences with cross-reference	0	0.00
Sentences with passive voices	1	0.10
Sentences with negative style	4	0.40
Sentences with wordiness, cliché jargon	2	0.20
Average ratio		0.30 (Quite Clear)

Clause 7 has highest ratio on with sentences more than 25 words. Out of 10 sentences, there are 80 percent, which is about 8 sentences with more than 25 words. Followed by 4

sentences that explain the prohibition of Contractor. However, the ratio for sentences with passive voice and sentences with cross-reference is very low, which pull down the average ratio of this clause. Thus, with an average ratio of 0.30, this clause is categorised as “Quite Clear”.

4.9.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.31.

Table 4.31: Completeness for Clause 7

Completeness	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Not Applicable
Rights of parties	Not Applicable
Obligations of parties	Complete

Table 4.31 continued

Contingency adaptability	
Guidelines/ Procedures	Incomplete
Period/ Cost/ Quantity	Incomplete
Alternative solutions	Not Applicable
Contractual obligatoriness	
Applicable law	Not Applicable
Penalization against the breaching party	Incomplete
Protection for the aggrieved party	Incomplete

Clause 7 is complete for term specificity, but incomplete in contingencies adaptability, and contractual obligatoriness. Time frame for the notification of discrepancy and time frame for the S.O. to resolve such notification is not specified in the provision. Other than that, no penalization or protection given to parties if another parties did not bother with the

discrepancy. This clause does not have provision regarding to specific period/ cost/ quantity, rights of relevant parties, alternative solutions, and applicable law.

4.9.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis will be done based on the employer, contractor, and S.O. in terms of rights and obligations.

Table 4.32: Distribution of rights and obligations for Clause 7

	Employer	Contractor	S.O.
Rights, R	0	0	0
Obligations, O	0	7	1
R/O	Undefined, ∞	0.00	0.00
O/R	Undefined, ∞	Undefined, ∞	Undefined, ∞
Min (R/O, O/R)	Undefined, ∞	0.00	0.00
Ratio Classification	Not applicable	Very Unbalanced	Very Unbalanced

Based on the ratio calculated for Clause 7, the minimum ratio obtained for both Contractor and S.O. are 0.00. Thus, the distribution of rights and obligations for Contractor and S.O. are classify under “Very Unbalanced”. This clause is not applicable in the study of the distribution of rights and obligations for Employer since he has no rights and no obligations under this clause.

4.10 Clause 8: Notices

4.10.1 Clause Description

Clause 8 consists of one sub-clauses explains the method and time of serving of notices to each contracting party.

4.10.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.33.

Table 4.33: Clarity for Clause 8

Total number of sentences: 4

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	2	0.50
Sentences with cross-reference	0	0.00
Sentences with passive voices	0	0.00
Sentences with negative style	3	0.75
Sentences with wordiness, cliché jargon	0	0.00
Average ratio		0.25 (Quite Clear)

Clause 8 has highest ratio on negative style of sentences, followed by sentences more than 25 words. However, the ratio for other parameters are zero. Thus, with an average ratio of 0.25, this clause is categorised as “Quite Clear”.

4.10.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.34.

Table 4.34: Completeness for Clause 8

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Rights of parties	Complete
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Alternative solutions	Complete

Table 4.34 continued

Contractual obligatoriness	
Applicable law	Not Applicable
Penalization against the breaching party	Not Applicable
Protection for the aggrieved party	Complete

Clause 8 is complete for term specificity, contingency adaptability, and contractual obligatoriness. This clause does not have provision regarding to applicable law, and penalization for breaching party.

4.10.4 Clause Analysis – Distribution of Rights and Obligations

Analysis in Table 4.35 is done based on the employer, contractor, and S.O. in terms of rights and obligations. Based on the ratio calculated for Clause 8, the minimum ratio obtained for all contracting parties are 0.50, which falls under the category of “Balanced”.

Table 4.35: Distribution of rights and obligations for Clause 8

	Employer	Contractor	S.O.
Rights, R	1	1	1
Obligations, O	2	2	2
R/O	0.50	0.50	0.50
O/R	2.00	2.00	2.00
Min (R/O, O/R)	0.50	0.50	0.50
Ratio Classification	Balanced	Balanced	Balanced

4.11 Clause 9: Patent Rights, Trademarks, Royalties

4.11.1 Clause Description

Clause 9 consists of two sub-clauses that covers the obligation of the Employer and the Contractor when facing patent rights, trademarks and royalties.

4.11.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.36.

Table 4.36: Clarity for Clause 9

Total number of sentences: 3

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	3	1.00
Sentences with cross-reference	0	0.00
Sentences with passive voices	0	0.00
Sentences with negative style	0	0.00
Sentences with wordiness, cliché jargon	0	0.00
Average ratio		0.20 (Very Clear)

Clause 9 has all three sentences with more than 25 words. However, the ratio for other parameters are zero. Thus, with an average ratio of 0.20, this clause is categorised as “Very Clear”.

4.11.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.37.

Table 4.37: Completeness for Clause 9

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Not Applicable
Rights of parties	Not Applicable
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Not Applicable
Alternative solutions	Not Applicable

Table 4.37 continued

Contractual obligatoriness	
Applicable law	Not Applicable
Penalization against the breaching party	Not Applicable
Protection for the aggrieved party	Complete

Clause 9 is complete for term specificity, contingency adaptability, and contractual obligatoriness. This clause does not have provision regarding to specific period/ cost/ quantity, rights of relevant parties, alternative solutions, applicable law, and penalization for breaching party.

4.11.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis will be done based on the employer, contractor, and S.O. in terms of rights and obligations.

Table 4.38: Distribution of rights and obligations for Clause 9

	Employer	Contractor	S.O.
Rights, R	0	0	0
Obligations, O	1	2	0
R/O	0.00	0.00	Undefined, ∞
O/R	Undefined, ∞	Undefined, ∞	Undefined, ∞
Min (R/O, O/R)	0.00	0.00	Undefined, ∞
Ratio Classification	Very Unbalanced	Very Unbalanced	Not Applicable

Based on the ratio calculated for Clause 9, the minimum ratio obtained for both Employer and Contractor are 0.00. Thus, the distribution of rights and obligations for both Employer and Contractor are classify under “Very Unbalanced”. This clause is not applicable in the study of the distribution of rights and obligations for S.O. since he has no rights and no obligations under this clause.

4.12 Clause 10: Compliance with Statutes, Regulations

4.12.1 Clause Description

Clause 10 consists of three sub-clauses that covers the Statutory Requirements, variation arising from compliance and also the changes in Statutory Requirements.

4.12.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.39.

Table 4.39: Clarity for Clause 10

Total number of sentences: 9

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	8	0.89
Sentences with cross-reference	2	0.22
Sentences with passive voices	0	0.00
Sentences with negative style	3	0.33
Sentences with wordiness, cliché jargon	0	0.00
Average ratio		0.29 (Quite Clear)

Clause 10 has higher ratio on sentences with more than 25 words and sentences with negative style. However, the ratio for other parameters are very low. Thus, with an average ratio of 0.18, this clause is categorised as “Very Clear”.

4.12.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.40. Clause 10 is complete for term specificity, contingency adaptability, and contractual obligatoriness. This clause does not have provision regarding to rights of relevant parties, alternative solutions, applicable law, and penalization for breaching party.

Table 4.40: Completeness for Clause 10

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Rights of parties	Not Applicable
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Alternative solutions	Not Applicable
Contractual obligatoriness	
Applicable law	Not Applicable
Penalization against the breaching party	Not Applicable
Protection for the aggrieved party	Complete

4.12.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis will be done based on the employer, contractor, and S.O. in terms of rights and obligations.

Table 4.41: Distribution of rights and obligations for Clause 10

	Employer	Contractor	S.O.
Rights, R	0	0	0
Obligations, O	2	5	3
R/O	0.00	0.00	0.00
O/R	Undefined, ∞	Undefined, ∞	Undefined, ∞
Min (R/O, O/R)	0.00	0.00	0.00
Ratio Classification	Very Unbalanced	Very Unbalanced	Very Unbalanced

Based on the ratio calculated for Clause 10, the minimum ratio obtained for Employer, Contractor and S.O. are 0. Thus, the distribution of rights and obligations for every contracting parties are classified under “Very Unbalanced”.

4.13 Clause 11: Environmental Matters

4.13.1 Clause Description

Clause 11 consists of one sub-clauses that explains the obligation of the contractor in compliance with Environmental Quality Act 1974.

4.13.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.42.

Table 4.42: Clarity for Clause 11

Total number of sentences: 3

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	2	0.67
Sentences with cross-reference	1	0.33
Sentences with passive voices	1	0.33
Sentences with negative style	0	0.00
Sentences with wordiness, cliché jargon	1	0.33
Average ratio		0.33 (Quite Clear)

Clause 11 has higher ratio on sentences with more than 25 words. However, the ratio for other parameters are low. Thus, with an average ratio of 0.33, this clause is categorised as “Quite Clear”.

4.13.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.43. Clause 10 is complete for term specificity and contractual obligatoriness. This clause does not have provision for contingencies adaptability, penalization for breaching party, and protection for aggrieved party.

Table 4.43: Completeness for Clause 11

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Rights of parties	Not Applicable
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Not Applicable
Period/ Cost/ Quantity	Not Applicable
Alternative solutions	Not Applicable
Contractual obligatoriness	
Applicable law	Complete
Penalization against the breaching party	Not Applicable
Protection for the aggrieved party	Not Applicable

4.13.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis will be done based on the employer, contractor, and S.O. in terms of rights and obligations.

Table 4.44: Distribution of rights and obligations for Clause 11

	Employer	Contractor	S.O.
Rights, R	0	0	0
Obligations, O	0	2	0
R/O	Undefined, ∞	0.00	Undefined, ∞
O/R	Undefined, ∞	Undefined, ∞	Undefined, ∞
Min (R/O, O/R)	Undefined, ∞	0.00	Undefined, ∞
Ratio Classification	Not Applicable	Very Unbalanced	Not Applicable

Based on the ratio calculated for Clause 11, the minimum ratio obtained for Contractor is 0 which the distribution of rights and obligations is classify under “Very Unbalanced”.

This clause is not applicable in the study of the distribution of rights and obligations for Employer and S.O. since they have no rights and no obligations under this clause.

4.14 Clause 12: Setting Out

4.14.1 Clause Description

Clause 12 consists of two sub-clauses that covers the responsibility of S.O. and Contractor in setting out the works accurately. Furthermore, action to be taken due to the errors in setting out also explained in this clause.

4.14.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.45.

Table 4.45: Clarity for Clause 12

Total number of sentences: 10

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	4	0.40
Sentences with cross-reference	3	0.30
Sentences with passive voices	0	0.00
Sentences with negative style	1	0.10
Sentences with wordiness, cliché jargon	0	0.00
Average ratio		0.16 (Very Clear)

Clause 12 has higher ratio on sentences with more than 25 words and sentences with cross-reference. However, the ratio for other parameters are very low. Thus, with an average ratio of 0.16, this clause is categorised as “Very Clear”.

4.14.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.46.

Table 4.46: Completeness for Clause 12

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Not Applicable
Rights of parties	Complete
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Alternative solutions	Not Applicable
Contractual obligatoriness	
Applicable law	Not Applicable
Penalization against the breaching party	Complete
Protection for the aggrieved party	Complete

Clause 12 is complete for term specificity, contingency adaptability, and contractual obligatoriness. This clause does not have provision regarding to specific period/ cost/ quantity, alternative solutions, and applicable law.

4.14.4 Clause Analysis – Distribution of Rights and Obligations

Analysis as shown in Table 4.47 was done based on the employer, contractor, and S.O. in terms of rights and obligations. Based on the ratio calculated for Clause 12, the minimum ratio obtained for Employer, Contractor is 0.20, and for S.O. is 1.00. Thus, the distribution of rights and obligations for Employer is classify under “Very Unbalanced”, for Contractor is Unbalanced, and for S.O. is “Very Good Balanced”.

Table 4.47: Distribution of rights and obligations for Clause 12

	Employer	Contractor	S.O.
Rights, R	0	1	1
Obligations, O	1	5	1
R/O	0.00	0.20	1.00
O/R	Undefined, ∞	5.00	1.00
Min (R/O, O/R)	0.00	0.20	1.00
Ratio Classification	Very Unbalanced	Unbalanced	Very Good Balanced

4.15 Clause 13: Site Administration

4.15.1 Clause Description

Clause 13 consists of four sub-clauses that covers the days and hours of working, Contractor's Representative, removal of workmen and other personnel, and the access for S.O.

4.15.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.48.

Table 4.48: Clarity for Clause 13

Total number of sentences: 13

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	10	0.77
Sentences with cross-reference	2	0.15
Sentences with passive voices	4	0.31
Sentences with negative style	4	0.31
Sentences with wordiness, cliché jargon	0	0.00
Average ratio		0.31 (Quite Clear)

Clause 13 has very high ratio on sentences with more than 25 words. However, the ratio for other parameters are low. Thus, with an average ratio of 0.31, this clause is categorised as “Quite Clear”.

4.15.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.49.

Table 4.49: Completeness for Clause 13

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Rights of parties	Complete
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Incomplete
Period/ Cost/ Quantity	Incomplete
Alternative solutions	Not Applicable
Contractual obligatoriness	
Applicable law	Incomplete
Penalization against the breaching party	Incomplete
Protection for the aggrieved party	Complete

Clause 13 is complete for term specificity, but incomplete in contingency adaptability, and contractual obligatoriness. Under clause 13.3, Contractor shall remove any person employed by him immediately under S.O.’s instruction. This clause is incomplete as the abrupt removal of a workman will cause stagnation of the work progress, which work will only resume when the contractor is able to acquire a replacement workman. The clause should have included a time period for which the workman has to be remove, giving the Contractor ample time to get replacement workmen and ensuring work progress is not

disturbed. Other than that, no provision is mentioned regarding to labour's law. There is no penalization for those who work overtime without permission.

4.15.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis will be done based on the employer, contractor, and S.O. in terms of rights and obligations.

Table 4.50: Distribution of rights and obligations for Clause 13

	Employer	Contractor	S.O.
Rights, R	0	0	4
Obligations, O	0	12	0
R/O	Undefined, ∞	0.00	Undefined, ∞
O/R	Undefined, ∞	Undefined, ∞	0.00
Min (R/O, O/R)	Undefined, ∞	0.00	0.00
Ratio Classification	Not Applicable	Very Unbalanced	Very Unbalanced

Based on the ratio calculated for Clause 13, the minimum ratio obtained for Contractor and S.O. is 0. Thus, the distribution of rights and obligations for Contractor and S.O. are classify under “Very Unbalanced”. The S.O. and Contractor should have a balanced authority in making the decision. This will ensure that the authority of the S.O. will be kept in checked by the Contract and not being abused. This clause is not applicable in the study of the distribution of rights and obligations for Employer since he has no rights and no obligations under this clause.

4.16 Clause 14: Safety at the Site

4.16.1 Clause Description

Clause 14 has four sub-clauses that relate to the issue of safety at site which cover the compliance with safety requirements, submission of safety programme, safety officer and personnel, and the safety measures on site.

4.16.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.51.

Table 4.51: Clarity for Clause 14

Total number of sentences: 14

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	7	0.50
Sentences with cross-reference	0	0.00
Sentences with passive voices	2	0.14
Sentences with negative style	2	0.14
Sentences with wordiness, cliché jargon	0	0.00
Average ratio		0.16 (Very Clear)

Clause 14 has quite high ratio on sentences with more than 25 words. However, the ratio for other parameters are very low. Thus, with an average ratio of 0.16, this clause is categorised as “Very Clear”.

4.16.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.52. Clause 14 is complete for term specificity and contractual obligatoriness, but incomplete for contingency adaptability. It did not provide guidelines to handle such contingencies as if

Contractor did not submit safety programme, or if S.O. did not approve the safety programme.

Table 4.52: Completeness for Clause 14

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Rights of parties	Not Applicable
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Incomplete
Period/ Cost/ Quantity	Incomplete
Alternative solutions	Not Applicable
Contractual obligatoriness	
Applicable law	Complete
Penalization against the breaching party	Not Applicable
Protection for the aggrieved party	Not Applicable

4.16.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis will be done based on the employer, contractor, and S.O. in terms of rights and obligations.

Table 4.53: Distribution of rights and obligations for Clause 14

	Employer	Contractor	S.O.
Rights, R	0	0	0
Obligations, O	0	7	1
R/O	Undefined, ∞	0.00	0.00
O/R	Undefined, ∞	Undefined, ∞	Undefined, ∞
Min (R/O, O/R)	Undefined, ∞	0.00	0.00
Ratio Classification	Not Applicable	Very Unbalanced	Very Unbalanced

Based on the ratio calculated for Clause 14, the minimum ratio obtained for both Contractor and S.O. are 0.00. Thus, the distribution of rights and obligations for Contractor and S.O. are classify under “Very Unbalanced”. This clause is not applicable in the study of the distribution of rights and obligations for Employer since he has no rights and no obligations under this clause.

4.17 Clause 15: Quality in Construction

4.17.1 Clause Description

Clause 15 provide provisions to maintain the quality in construction. This clause covers 7 sub-clauses that describe the equipment, materials, goods and workmanship, quality assurance and quality control, supply of samples, cost of test, examination and measurement of works before covering up, uncovering and making openings, and defects during the progress of the works.

4.17.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.54.

Table 4.54: Clarity for Clause 15

Total number of sentences: 32

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	17	0.53
Sentences with cross-reference	4	0.13
Sentences with passive voices	3	0.09
Sentences with negative style	10	0.31
Sentences with wordiness, cliché jargon	0	0.00
Average ratio		0.21 (Quite Clear)

Clause 15 has higher ratio on sentences with more than 25 words and sentences with negative style. However, the ratio for other parameters are very low. Thus, with an average ratio of 0.21, this clause is categorised as “Quite Clear”.

4.17.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.55.

Table 4.55: Completeness for Clause 15

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Rights of parties	Complete
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Not Applicable
Alternative solutions	Complete
Contractual obligatoriness	
Applicable law	Not Applicable
Penalization against the breaching party	Complete
Protection for the aggrieved party	Complete

Clause 15 is complete for term specificity, contingency adaptability, and contractual obligatoriness. This clause does not have provision regarding to specific period/ cost/ quantity for contingencies and applicable law.

4.17.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis will be done based on the employer, contractor, and S.O. in terms of rights and obligations.

Table 4.56: Distribution of rights and obligations for Clause 15

	Employer	Contractor	S.O.
Rights, R	2	0	8
Obligations, O	2	14	2
R/O	1.00	0.00	4.00
O/R	1.00	Undefined, ∞	0.25
Min (R/O, O/R)	1.00	0.00	0.25
Ratio Classification	Very Good Balanced	Very Unbalanced	Unbalanced

Based on the ratio calculated for Clause 15, the minimum ratio obtained for Employer, Contractor, and S.O. are 1.00, 0.00 and 0.25 respectively. Thus, the Employer obtained a “Very Good Balanced” distribution, while Contractor obtained a “Very Unbalanced” distribution and S.O. have an “Unbalanced” distribution ratio of rights and obligations. This clause seems to be unfair for contractor, but as a contractor, he is obliged to carry out his works in construction site, thus, he would have more obligations compare to other contracting parties under this clause.

4.18 Clause 16: Labour

4.18.1 Clause Description

Clause 16 consists of two sub-clauses that explain the provisions about labour which covers the engagement of all workmen and labour and the returns of labour.

4.18.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.57. Every sentence in Clause 16 has more than 25 words. But with an average ratio of 0.30, this clause is categorised as “Quite Clear”.

Table 4.57: Clarity for Clause 16

Total number of sentences: 2

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	2	1.00
Sentences with cross-reference	0	0.00
Sentences with passive voices	1	0.50
Sentences with negative style	0	0.00
Sentences with wordiness, cliché jargon	0	0.00
Average ratio		0.30 (Quite Clear)

4.18.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.58.

Table 4.58: Completeness for Clause 16

Term Specificity	
Guidelines/ Procedures	Incomplete
Period/ Cost/ Quantity	Complete
Rights of parties	Complete
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Incomplete
Period/ Cost/ Quantity	Incomplete
Alternative solutions	Not Applicable
Contractual obligatoriness	
Applicable law	Incomplete
Penalization against the breaching party	Incomplete
Protection for the aggrieved party	Incomplete

Clause 16 is incomplete for term specificity, contingency adaptability, and contractual obligatoriness. This clause did not declare the preconditions for the employment of foreign labours, do not have provisions regarding to discharge of labour, no specific labour law

mentioned, penalization or protection to parties if contractor fail to comply with his responsibilities with employed labour.

4.18.4 Clause Analysis – Distribution of Rights and Obligations

Analysis as shown in Table 4.59 was done based on the employer, contractor, and S.O. in terms of rights and obligations. Based on the ratio calculated for Clause 16, the minimum ratio obtained for both Contractor and S.O. are 0.00. Thus, the distribution of rights and obligations for Contractor and S.O. are classify under “Very Unbalanced”. This clause is not applicable in the study of the distribution of rights and obligations for Employer since he has no rights and no obligations under this clause.

Table 4.59: Distribution of rights and obligations for Clause 16

	Employer	Contractor	S.O.
Rights, R	0	0	1
Obligations, O	0	3	0
R/O	Undefined, ∞	0.00	Undefined, ∞
O/R	Undefined, ∞	Undefined, ∞	0.00
Min (R/O, O/R)	Undefined, ∞	0.00	0.00
Ratio Classification	Not Applicable	Very Unbalanced	Very Unbalanced

4.19 Clause 17: Commencement of Works and Possession of Site

4.19.1 Clause Description

Clause 17 consists of 4 sub-clauses that describes the commencement of works and possession of site which covers the date of commencement, possession of site, no date of commencement or failure to give possession, and the right of way or access.

4.19.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.60. Clause 17 has higher ratio on sentences with more than 25 words and sentences with cross-reference. However, the ratio for other parameters are relatively low. Thus, with an average ratio of 0.33, this clause is categorised as “Quite Clear”.

Table 4.60: Clarity for Clause 17

Total number of sentences: 20

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	13	0.65
Sentences with cross-reference	10	0.50
Sentences with passive voices	5	0.25
Sentences with negative style	5	0.25
Sentences with wordiness, cliché jargon	0	0.00
Average ratio		0.33 (Quite Clear)

4.19.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.61.

Table 4.61: Completeness for Clause 17

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Rights of parties	Complete
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Alternative solutions	Not Applicable

Table 4.61 continued

Contractual obligatoriness	
Applicable law	Not Applicable
Penalization against the breaching party	Not Applicable
Protection for the aggrieved party	Complete

Clause 17 is complete for term specificity, contingency adaptability, and contractual obligatoriness. This clause does not have provision regarding to alternative solutions, applicable law, and penalization against breaching party.

4.19.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis will be done based on the employer, contractor, and S.O. in terms of rights and obligations.

Table 4.62: Distribution of rights and obligations for Clause 17

	Employer	Contractor	S.O.
Rights, R	1	4	0
Obligations, O	1	8	1
R/O	1.00	0.50	0.00
O/R	1.00	2.00	Undefined, ∞
Min (R/O, O/R)	1.00	0.50	0.00
Ratio Classification	Very Good Balanced	Balanced	Very Unbalanced

Based on the ratio calculated for Clause 17, the minimum ratio obtained for Employer, Contractor and S.O. are 1.00, 0.50 and 0.00 respectively. Thus, the distribution of rights and obligations for Employer is classify under “Very Good Balanced”, for Contractor is “Balanced”, while S.O. have a “Very Unbalanced” ratio of rights and obligations.

4.20 Clause 18: Other Contractors

4.20.1 Clause Description

Clause 18 consists of 2 sub-clauses that explain the Employer's right to employ other Contractor and the inspection of work done by other Contractor.

4.20.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.63. Clause 18 has higher ratio on sentences with more than 25 words. However, the ratio for other parameters are low. Thus, with an average ratio of 0.23, this clause is categorised as “Quite Clear”.

Table 4.63: Clarity for Clause 18

Total number of sentences: 6

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	4	0.67
Sentences with cross-reference	0	0.00
Sentences with passive voices	1	0.17
Sentences with negative style	2	0.33
Sentences with wordiness, cliché jargon	0	0.00
Average ratio		0.23 (Quite Clear)

4.20.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.64. Clause 18 is incomplete for term specificity, contingency adaptability, and contractual obligatoriness. Firstly, the responsibility of employer to other contractors is not clarified, and the rights and obligation of other contractors is not mentioned. Under contingency adaptability, no provision or cross-references are given regarding to the procedure for

payment, extension of time or other situation. Other than that, time frame for the notification of discrepancy and issuance of instruction is not specified in the provision. This clause does not have provision regarding to alternative solutions, applicable law, and penalization against breaching parties.

Table 4.64: Completeness for Clause 18

Term Specificity	
Guidelines/ Procedures	Incomplete
Period/ Cost/ Quantity	Not Applicable
Rights of parties	Incomplete
Obligations of parties	Incomplete
Contingency adaptability	
Guidelines/ Procedures	Incomplete
Period/ Cost/ Quantity	Incomplete
Alternative solutions	Not Applicable
Contractual obligatoriness	
Applicable law	Not Applicable
Penalization against the breaching party	Not Applicable
Protection for the aggrieved party	Complete

4.20.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis will be done based on the employer, contractor, and S.O. in terms of rights and obligations.

Table 4.65: Distribution of rights and obligations for Clause 18

	Employer	Contractor	S.O.
Rights, R	1	0	0
Obligations, O	1	3	1
R/O	1.00	0.00	0.00
O/R	1.00	Undefined, ∞	Undefined, ∞
Min (R/O, O/R)	1.00	0.00	0.00
Ratio Classification	Very Good Balanced	Very Unbalanced	Very Unbalanced

Based on the ratio calculated for Clause 18, the minimum ratio obtained for Employer is 1.00, while for Contractor and S.O. are 0.00. Thus, Employer has a “Very Good Balanced” distribution of rights and obligations, while Contractor, and S.O. have “Very Unbalanced” distribution of rights and obligations. In this clause, Contractor is obliged to inspect the work done by other contractors that is employed by Employer, and Superintending Officer is obliged to issue instructions to the Contractor to resolve the discrepancies or Defects.

4.21 Clause 19: Suspension

4.21.1 Clause Description

Clause 19 consists of 3 sub-clauses that covers the suspension of works, prolonged suspension and the effects of prolonged suspension.

4.21.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.66.

Table 4.66: Clarity for Clause 19

Total number of sentences: 20

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	9	0.45
Sentences with cross-reference	11	0.55
Sentences with passive voices	0	0.00
Sentences with negative style	5	0.25
Sentences with wordiness, cliché jargon	0	0.00
Average ratio		0.25 (Quite Clear)

Clause 19 has highest ratio on sentences with cross-reference, followed by sentences with more than 25 words. However, the ratio for other parameters are quite low. Thus, with an average ratio of 0.25, this clause is categorised as “Quite Clear”.

4.21.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.67. Clause 19 is complete for term specificity, contingency adaptability, and contractual obligatoriness. This clause does not have provision regarding to specific period/ cost/ quantity, alternative solutions, applicable law, and penalization against breaching parties.

Table 4.67: Completeness for Clause 19

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Rights of parties	Complete
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Alternative solutions	Not Applicable
Contractual obligatoriness	
Applicable law	Not Applicable
Penalization against the breaching party	Not Applicable
Protection for the aggrieved party	Complete

4.21.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis as in Table 4.68 will be done based on the employer, contractor, and S.O. in terms of rights and obligations.

Table 4.68: Distribution of rights and obligations for Clause 19

	Employer	Contractor	S.O.
Rights, R	0	3	2
Obligations, O	0	2	1
R/O	Undefined, ∞	1.50	2.00
O/R	Undefined, ∞	0.67	0.50
Min (R/O, O/R)	Undefined, ∞	0.67	0.50
Ratio Classification	Not Applicable	Good Balanced	Balanced

Based on the ratio calculated for Clause 19, the minimum ratio obtained for Contractor and S.O. are 0.67 and 0.50 respectively. Thus, the distribution of rights and obligations for Contractor is classify under “Good Balanced” while S.O. have a “Balanced” ratio of rights and obligations. This clause is not applicable in the study of the distribution of rights and obligations for Employer since he has no rights and no obligations under this clause.

4.22 Clause 20: Time for Completion

4.22.1 Clause Description

Clause 20 consists of 3 sub-clauses that outline the time for completion for a Contractor, certificate of practical completion and the access for remedial work.

4.22.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.69. Clause 20 has highest ratio on sentences with more than 25 words. However, the ratio for other parameters are quite low. Thus, with an average ratio of 0.26, this clause is categorised as “Quite Clear”.

Table 4.69: Clarity for Clause 20

Total number of sentences: 13

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	7	0.54
Sentences with cross-reference	2	0.15
Sentences with passive voices	3	0.23
Sentences with negative style	4	0.31
Sentences with wordiness, cliché jargon	1	0.08
Average ratio		0.26 (Quite Clear)

4.22.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.70.

Table 4.70: Completeness for Clause 20

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Rights of parties	Complete
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Alternative solutions	Not Applicable
Contractual obligatoriness	
Applicable law	Not Applicable
Penalization against the breaching party	Complete
Protection for the aggrieved party	Complete

Clause 20 is complete for term specificity, contingency adaptability, and contractual obligatoriness. This clause does not have provision regarding to alternative solutions, and applicable law.

4.22.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis will be done based on the employer, contractor, and S.O. in terms of rights and obligations.

Table 4.71: Distribution of rights and obligations for Clause 20

	Employer	Contractor	S.O.
Rights, R	0	1	0
Obligations, O	0	2	4
R/O	Undefined, ∞	0.50	0.00
O/R	Undefined, ∞	2.00	Undefined, ∞
Min (R/O, O/R)	Undefined, ∞	0.50	0.00
Ratio Classification	Not Applicable	Balanced	Very Unbalanced

Based on the ratio calculated for Clause 20, the minimum ratio obtained for Contractor and S.O. are 0.50 and 0.00 respectively. Thus, the distribution of rights and obligations for Contractor is classify under “Balanced” while S.O. have a “Very Unbalanced” ratio of rights and obligations. This clause is not applicable in the study of the distribution of rights and obligations for Employer since he has no rights and no obligations under this clause.

4.23 Clause 21: Test on Completion

4.23.1 Clause Description

Clause 21 consists of 4 sub-clauses that related to the test on completion. This clause includes the provision on notice of tests and test reports, failure to appoint time for test, facilities for test on completion, and repeat tests.

4.23.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.72.

Table 4.72: Clarity for Clause 21

Total number of sentences: 8

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	6	0.75
Sentences with cross-reference	2	0.25
Sentences with passive voices	2	0.25
Sentences with negative style	2	0.25
Sentences with wordiness, cliché jargon	0	0.00
Average ratio		0.30 (Quite Clear)

Clause 21 has higher ratio on sentences with more than 25 words, while the ratio for other parameters are relatively low. Thus, with an average ratio of 0.30, this clause is categorised as “Quite Clear”.

4.23.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.73.

Table 4.73: Completeness for Clause 21

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Rights of parties	Complete
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Alternative solutions	Complete

Table 4.73 continued

Contractual obligatoriness	
Applicable law	Not Applicable
Penalization against the breaching party	Complete
Protection for the aggrieved party	Complete

Clause 20 is complete for term specificity, contingency adaptability, and contractual obligatoriness. This clause does not have provision regarding to applicable law.

4.23.4 Clause Analysis – Distribution of Rights and Obligations

Analysis as shown in Table 4.74 was done based on the employer, contractor, and S.O. in terms of rights and obligations. Based on the ratio calculated for Clause 21, the minimum ratio obtained for Employer and S.O. are 1.00, while for Contractor is 0.13. Thus, the distribution of rights and obligations for Employer and S.O. are classify under “Very Good Balanced”, while Contractor have a “Very Unbalanced” ratio of rights and obligations.

Table 4.74: Distribution of rights and obligations for Clause 21

	Employer	Contractor	S.O.
Rights, R	1	1	1
Obligations, O	1	8	1
R/O	1.00	0.13	1.00
O/R	1.00	8.00	1.00
Min (R/O, O/R)	1.00	0.13	1.00
Ratio Classification	Very Good Balanced	Very Unbalanced	Very Good Balanced

4.24 Clause 22: Sectional Completion

4.24.1 Clause Description

Clause 22 only consists of one sub-clause that describes the completion in section.

4.24.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.75.

Table 4.75: Clarity for Clause 22

Total number of sentences: 10

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	4	0.40
Sentences with cross-reference	8	0.80
Sentences with passive voices	1	0.10
Sentences with negative style	3	0.30
Sentences with wordiness, cliché jargon	0	0.00
Average ratio		0.32 (Quite Clear)

Clause 22 has highest ratio on sentences with cross reference. However, the ratio for other parameters are quite low. Thus, with an average ratio of 0.32, this clause is categorised as “Quite Clear”.

4.24.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.76.

Table 4.76: Completeness for Clause 22

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Rights of parties	Not Applicable
Obligations of parties	Not Applicable
Contingency adaptability	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Not Applicable
Alternative solutions	Not Applicable

Table 4.76 continued

Contractual obligatoriness	
Applicable law	Not Applicable
Penalization against the breaching party	Not Applicable
Protection for the aggrieved party	Not Applicable

Clause 22 is complete for term specificity and contingencies adaptability. The procedure to manage contingencies is not provided in this clause but it refers the case to related clause. This clause does not have provision regarding to rights and obligation of relevant parties, contingency adaptability and contractual obligatoriness.

4.24.4 Clause Analysis – Distribution of Rights and Obligations

Clause 22 only provide the guidelines for completion in section. Since the rights and obligation of each contracting party are not stated, this clause will be excluded from this study.

4.25 Clause 23: Partial Occupation by the Employer

4.25.1 Clause Description

Clause 23 explains the partial occupation by the employer. This clause consists 3 sub-clauses that covers the occupation of part with consent, consequential effects and occupation of part without consent.

4.25.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.77.

Table 4.77: Clarity for Clause 23

Total number of sentences: 15

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	14	0.93
Sentences with cross-reference	11	0.73
Sentences with passive voices	5	0.33
Sentences with negative style	2	0.13
Sentences with wordiness, cliché jargon	0	0.00
Average ratio		0.43 (Clear)

Out of a total of 15 sentences, there is 14 sentences with more than 25 words, which makes the clause very difficult to comprehend. Furthermore, there is 11 sentences with cross-reference that is used to explain which clause shall apply under certain circumstances. Despite the high percentage of the two parameters, there is only 5 sentences with passive voice and 2 sentences with negative style. There are no sentences with wordiness, cliché and jargon. With an average ratio of 0.43, this clause is categorised as “Clear”.

4.25.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.78. Clause 23 is complete for term specificity and contractual obligatoriness, but incomplete contingency adaptability. This clause does not provide a time frame for the contractor to remove his site facilities, plant and equipment and material or goods from the site is given.

Table 4.78: Completeness for Clause 23

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Rights of parties	Complete
Obligations of parties	Complete

Table 4.78 continued

Contingency adaptability	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Incomplete
Alternative solutions	Not Applicable
Contractual obligatoriness	
Applicable law	Not Applicable
Penalization against the breaching party	Complete
Protection for the aggrieved party	Complete

4.25.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis in Table 4.79 was done based on the employer, contractor, and S.O. in terms of rights and obligations.

Table 4.79: Distribution of rights and obligations for Clause 23

	Employer	Contractor	S.O.
Rights, R	2	1	0
Obligations, O	2	2	2
R/O	1.00	0.50	0.00
O/R	1.00	2.00	Undefined, ∞
Min (R/O, O/R)	1.00	0.50	0.00
Ratio Classification	Very Good Balanced	Balanced	Very Unbalanced

Based on the ratio calculated for Clause 23, the minimum ratio obtained for Employer, Contractor, and S.O. are 1.00, 0.50 and 0.00 respectively. Thus, the distribution of rights and obligations for Employer classify under “Very Good Balanced”, while for contractor, the ratio is “Balanced” and S.O. have a “Very Unbalanced” ratio of rights and obligations.

4.26 Clause 24: Delay and Extension of Time

4.26.1 Clause Description

Clause 24 consists 7 sub-clauses regarding the issue on delay and extension of time that provide the condition to request delay and extension of time for the works and covers the notice of delay, S.O.'s decision, interim decision of extension of time, S.O.'s discretion, certificate of extension of time, and review of S.O.'s decision.

4.26.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.80. Clause 24 has highest ratio on sentences with cross reference, followed by sentences with more than 25 words and sentences with negative style. High percentage of cross reference is required in this clause to relate the issue from another clause. Relatively, the ratio for other parameters are very low. Thus, with an average ratio of 0.28, this clause is categorised as “Quite Clear”.

Table 4.80: Clarity for Clause 24

Total number of sentences: 42

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	21	0.50
Sentences with cross-reference	22	0.52
Sentences with passive voices	1	0.02
Sentences with negative style	15	0.36
Sentences with wordiness, cliché jargon	0	0.00
Average ratio		0.28 (Quite Clear)

4.26.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.81.

Table 4.81: Completeness for Clause 24

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Rights of parties	Incomplete
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Incomplete
Period/ Cost/ Quantity	Complete
Alternative solutions	Complete
Contractual obligatoriness	
Applicable law	Complete
Penalization against the breaching party	Complete
Protection for the aggrieved party	Complete

Clause 24 is complete for contingencies adaptability, and contractual obligatoriness, but incomplete for term specificity. This clause did not provide the rights for Employer to give extension of time, and rights for Contractor to disagree the decision of S.O. Besides, whether the S.O. decision is final is not mentioned in the clause.

4.26.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis as in Table 4.82 will be done based on the employer, contractor, and S.O. in terms of rights and obligations. Based on the ratio calculated for Clause 24, the minimum ratio obtained for Contractor and S.O. are 0.50 and 0.71 respectively. Thus, the distribution of rights and obligations for Contractor is classify under “Balanced” while S.O. have a “Good Balanced” ratio of rights and obligations. This clause is not applicable in the study of the distribution of rights and obligations for Employer since he has no rights and no obligations under this clause.

Table 4.82: Distribution of rights and obligations for Clause 24

	Employer	Contractor	S.O.
Rights, R	0	1	5
Obligations, O	0	2	7
R/O	Undefined, ∞	0.50	0.71
O/R	Undefined, ∞	2.00	1.40
Min (R/O, O/R)	Undefined, ∞	0.50	0.71
Ratio Classification	Not Applicable	Balanced	Good Balanced

4.27 Clause 25: Expediting Progress of Work

4.27.1 Clause Description

Clause 25 consists 2 sub-clauses that explains the notification to expedite and work to expedite progress.

4.27.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.83.

Table 4.83: Clarity for Clause 25

Total number of sentences: 5

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	5	1.00
Sentences with cross-reference	3	0.60
Sentences with passive voices	0	0.00
Sentences with negative style	2	0.40
Sentences with wordiness, cliché jargon	1	0.20
Average ratio		0.44 (Clear)

Every sentence in Clause 25 has more than 25 words. The ratio for sentences with cross-reference are quite high also. Thus, with an average ratio of 0.44, this clause is categorised as “Clear”.

4.27.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.84.

Table 4.84: Completeness for Clause 25

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Rights of parties	Not Applicable
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Not Applicable
Alternative solutions	Not Applicable
Contractual obligatoriness	
Applicable law	Not Applicable
Penalization against the breaching party	Not Applicable
Protection for the aggrieved party	Complete

Clause 25 is complete for term specificity, contingency adaptability, and contractual obligatoriness. This clause does not have provision regarding to rights of parties, specific period/ cost/ quantity for contingencies adaptability, alternative solutions, applicable law, and penalization against breaching parties.

4.27.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis will be done based on the employer, contractor, and S.O. in terms of rights and obligations. Based on the ratio calculated for Clause 25, the minimum ratio obtained for both Contractor and S.O. are 0.00. Thus, the distribution of rights and obligations for Contractor and S.O. is classify under “Very Unbalanced”. This clause is not

applicable in the study of the distribution of rights and obligations for Employer since he has no rights and no obligations under this clause.

Table 4.85: Distribution of rights and obligations for Clause 25

	Employer	Contractor	S.O.
Rights, R	0	0	0
Obligations, O	0	2	1
R/O	Undefined, ∞	0.00	0.00
O/R	Undefined, ∞	Undefined, ∞	Undefined, ∞
Min (R/O, O/R)	Undefined, ∞	0.00	0.00
Ratio Classification	Not Applicable	Very Unbalanced	Very Unbalanced

4.28 Clause 26: Non-Completion and Damages for Delay in Completion

4.28.1 Clause Description

Clause 26 consists of 4 sub-clauses that covers the certificate and damage for non-completion, employer's rights for damages at law, and extension of time during delay period.

4.28.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.86.

Table 4.86: Clarity for Clause 26

Total number of sentences: 14

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	8	0.57
Sentences with cross-reference	5	0.36
Sentences with passive voices	5	0.36
Sentences with negative style	10	0.71
Sentences with wordiness, cliché jargon	0	0.00
Average ratio		0.40 (Quite Clear)

Clause 26 has highest ratio on sentences with negative style, followed by sentences with more than 25 words. The ratio for other parameters are low. Thus, with an average ratio of 0.40, this clause is categorised as “Quite Clear”.

4.28.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.87. Clause 26 is complete for every parameters of completeness, explicitly term specificity, contingencies adaptability, and contractual obligatoriness.

Table 4.87: Completeness for Clause 26

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Rights of parties	Complete
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Alternative solutions	Complete
Contractual obligatoriness	
Applicable law	Complete
Penalization against the breaching party	Complete
Protection for the aggrieved party	Complete

4.28.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis will be done based on the employer, contractor, and S.O. in terms of rights and obligations. Based on the ratio calculated for Clause 26, the minimum ratio obtained for Employer and S.O. are 0.50 and 0.00 respectively. Thus, the distribution of rights and obligations for Employer is classify under “Balanced” while S.O. have a “Very

Unbalanced” ratio of rights and obligations. This clause is not applicable in the study of the distribution of rights and obligations for Contractor since he has no rights and no obligations under this clause.

Table 4.88: Distribution of rights and obligations for Clause 26

	Employer	Contractor	S.O.
Rights, R	4	0	0
Obligations, O	2	0	4
R/O	2.00	Undefined, ∞	0.00
O/R	0.50	Undefined, ∞	Undefined, ∞
Min (R/O, O/R)	0.50	Undefined, ∞	0.00
Ratio Classification	Balanced	Not Applicable	Very Unbalanced

4.29 Clause 27: Defects Liability after Completion

4.29.1 Clause Description

Clause 27 consists of 7 sub-clauses that provides the explanations regarding defects on Works after completion and within Defects Liability Period. This clause also covers the cost of remedying defects, default in remedying defects, diminution in value of works, contractor to search, certificate of making good defects, and liability at law.

4.29.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.89. Clause 27 has highest ratio on sentences with more than 25 words. However, the ratio for other parameters are less than half. Thus, with an average ratio of 0.18, this clause is categorised as “Quite Clear”.

Table 4.89: Clarity for Clause 27

Total number of sentences: 21

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	14	0.67
Sentences with cross-reference	5	0.24
Sentences with passive voices	4	0.19
Sentences with negative style	7	0.33
Sentences with wordiness, cliché jargon	1	0.05
Average ratio		0.30 (Quite Clear)

4.29.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.90.

Table 4.90: Completeness for Clause 27

Term Specificity	
Guidelines/ Procedures	Incomplete
Period/ Cost/ Quantity	Incomplete
Rights of parties	Complete
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Incomplete
Period/ Cost/ Quantity	Incomplete
Alternative solutions	Complete
Contractual obligatoriness	
Applicable law	Not Applicable
Penalization against the breaching party	Complete
Protection for the aggrieved party	Complete

Clause 27 is complete for contractual obligatoriness, but incomplete for term specificity, contingency adaptability. This clause fails to define the meaning of defects and any outstanding works in the contract as in the conditions precedent to using the defects and

outstanding works. The clause does not include serving of the notice of default including the calculation of cost of remedying the defects by others to the contractor before such deduction. Time frame for the issuance of certificate of making good defects is not indicated nor is the procedures for return of performance security bond and retention monies made or referred to after the issuance of certificate of making good defects.

4.29.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis will be done based on the employer, contractor, and S.O. in terms of rights and obligations.

Table 4.91: Distribution of rights and obligations for Clause 27

	Employer	Contractor	S.O.
Rights, R	3	0	3
Obligations, O	0	5	4
R/O	Undefined, ∞	0.00	0.75
O/R	0.00	Undefined, ∞	1.33
Min (R/O, O/R)	0.00	0.00	0.75
Ratio Classification	Very Unbalanced	Very Unbalanced	Good Balanced

Based on the ratio calculated for Clause 27, the minimum ratio obtained for Employer and Contractor are 0.00, while for S.O. is 0.75 respectively. Thus, the distribution of rights and obligations for Employer and Contractor are classify under “Very Unbalanced”, while S.O. have a “Good Balanced” ratio of rights and obligations.

4.30 Clause 28: Variation

4.30.1 Clause Description

Clause 28 only consist of one sub-clause that gives power for the Superintending Officer to order variations.

4.30.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.92. Clause 28 has quite high ratio on sentences with more than 25 words. The ratio for other parameters are lower, but, with an average ratio of 0.46, this clause is categorised as “Clear”.

Table 4.92: Clarity for Clause 28

Total number of sentences: 7

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	5	0.71
Sentences with cross-reference	3	0.43
Sentences with passive voices	3	0.43
Sentences with negative style	3	0.43
Sentences with wordiness, cliché jargon	2	0.29
Average ratio		0.46 (Clear)

4.30.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.93. Clause 28 is complete for contractual obligatoriness, but incomplete for term specificity, contingency adaptability. This clause does not does not properly defines the terms variations and the conditions precedent to using the terms variations. Procedures and time frames with respect to the application by Contractor; issuance of or recommendation by SO’s order for

variation; and approval/disapproval by the Government on the issue Variation is not provided.

Table 4.93: Completeness for Clause 28

Term Specificity	
Guidelines/ Procedures	Incomplete
Period/ Cost/ Quantity	Incomplete
Rights of parties	Complete
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Incomplete
Period/ Cost/ Quantity	Incomplete
Alternative solutions	Not Applicable
Contractual obligatoriness	
Applicable law	Not Applicable
Penalization against the breaching party	Complete
Protection for the aggrieved party	Complete

4.30.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis will be done based on the employer, contractor, and S.O. in terms of rights and obligations.

Table 4.94: Distribution of rights and obligations for Clause 28

	Employer	Contractor	S.O.
Rights, R	0	1	1
Obligations, O	0	3	1
R/O	Undefined, ∞	0.33	1.00
O/R	Undefined, ∞	3.00	1.00
Min (R/O, O/R)	Undefined, ∞	0.33	1.00
Ratio Classification	Not Applicable	Unbalanced	Very Good Balanced

Based on the ratio calculated for Clause 28, the minimum ratio obtained for Contractor and S.O. are 0.33 and 1.00 respectively. Thus, the distribution of rights and obligations for Contractor is classify under “Unbalanced” while S.O. have a “Very Good Balanced” ratio of rights and obligations. This clause is not applicable in the study of the distribution of rights and obligations for Employer since he has no rights and no obligations under this clause. S.O. is entitled to issue an instruction in writing requiring a Variation under this clause, while his obligation is to confirm, modify or rescind in writing the said instruction.

4.31 Clause 29: Valuation of Variations

4.31.1 Clause Description

Clause 29 consists of 3 sub-clauses that describes the valuation method, agreement on valuation, and the inclusion of variations in interim certificates.

4.31.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.95.

Table 4.95: Clarity for Clause 29

Total number of sentences: 18

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	15	0.83
Sentences with cross-reference	4	0.22
Sentences with passive voices	6	0.33
Sentences with negative style	11	0.61
Sentences with wordiness, cliché jargon	2	0.11
Average ratio		0.42 (Clear)

Clause 29 has highest ratio on sentences with more than 25 words followed by sentences with negative style. The ratio for other parameters are low, but with an average ratio of 0.42, this clause is categorised as “Clear”.

4.31.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.96. Clause 29 is complete for term specificity, contingency adaptability, and contractual obligatoriness. This clause does not have provision regarding to applicable law.

Table 4.96: Completeness for Clause 29

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Rights of parties	Complete
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Alternative solutions	Complete
Contractual obligatoriness	
Applicable law	Not Applicable
Penalization against the breaching party	Complete
Protection for the aggrieved party	Complete

4.31.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis will be done based on the employer, contractor, and S.O. in terms of rights and obligations. Based on the ratio calculated for Clause 29, the minimum ratio obtained for Contractor and S.O. are 0.17 and 0.20 respectively. Thus, the distribution of rights and obligations for Contractor classify under “Very Unbalanced”, while S.O. has

an “Unbalanced” ratio of rights and obligations. This clause is not applicable in the study of the distribution of rights and obligations for Employer since he has no rights and no obligations under this clause.

Table 4.97: Distribution of rights and obligations for Clause 29

	Employer	Contractor	S.O.
Rights, R	0	1	1
Obligations, O	0	6	5
R/O	Undefined, ∞	0.17	0.20
O/R	Undefined, ∞	6.00	5.00
Min (R/O, O/R)	Undefined, ∞	0.17	0.20
Ratio Classification	Not Applicable	Very Unbalanced	Unbalanced

4.32 Clause 30: Measurement

4.32.1 Clause Description

Clause 30 consists 4 sub-clauses that explains the obligations of contractor to attend measurement, to provide assistance, to record measurements, and action to be taken if the Contractor fails to agree measurements.

4.32.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.98. Clause 30 has same ratio on sentences with more than 25 words and sentences with negative style. The ratio for other parameters are relatively low. Thus, with an average ratio of 0.31, this clause is categorised as “Quite Clear”.

Table 4.98: Clarity for Clause 30

Total number of sentences: 9

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	5	0.56
Sentences with cross-reference	0	0.00
Sentences with passive voices	3	0.33
Sentences with negative style	5	0.56
Sentences with wordiness, cliché jargon	1	0.11
Average ratio		0.31 (Quite Clear)

4.32.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.99.

Table 4.99: Completeness for Clause 30

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Rights of parties	Not Applicable
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Alternative solutions	Not Applicable
Contractual obligatoriness	
Applicable law	Not Applicable
Penalization against the breaching party	Not Applicable
Protection for the aggrieved party	Not Applicable

Clause 30 is complete for term specificity, contingency adaptability, and contractual obligatoriness. This clause does not have provision regarding to rights of parties, alternative solution, and contractual obligatoriness.

4.32.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis as in Table 4.100 will be done based on the employer, contractor, and S.O. in terms of rights and obligations. Based on the ratio calculated for Clause 30, the minimum ratio obtained for both Contractor and S.O. are 0.00. Thus, the distribution of rights and obligations for Contractor and S.O. are classify under “Very Unbalanced”. This clause is not applicable in the study of the distribution of rights and obligations for Employer since he has no rights and no obligations under this clause.

Table 4.100: Distribution of rights and obligations for Clause 30

	Employer	Contractor	S.O.
Rights, R	0	0	0
Obligations, O	0	5	4
R/O	Undefined, ∞	0.00	0.00
O/R	Undefined, ∞	Undefined, ∞	Undefined, ∞
Min (R/O, O/R)	Undefined, ∞	0.00	0.00
Ratio Classification	Not Applicable	Very Unbalanced	Very Unbalanced

4.33 Clause 31: Claims for Loss and Expense

4.33.1 Clause Description

Clause 31 only consist one sub-clause describes regarding to the reasons for loss and expense claim.

4.33.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.101. Clause 31 has higher ratio on sentences with-cross reference and sentences with negative style. However, the ratio for other parameters are quite low. Thus, with an average ratio of 0.30, this clause is categorised as “Quite Clear”.

Table 4.101: Clarity for Clause 31

Total number of sentences: 12

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	4	0.33
Sentences with cross-reference	7	0.58
Sentences with passive voices	1	0.08
Sentences with negative style	6	0.50
Sentences with wordiness, cliché jargon	0	0.00
Average ratio		0.30 (Quite Clear)

4.33.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.102.

Table 4.102: Completeness for Clause 31

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Not Applicable
Rights of parties	Complete
Obligations of parties	Not Applicable
Contingency adaptability	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Not Applicable
Alternative solutions	Not Applicable
Contractual obligatoriness	
Applicable law	Not Applicable
Penalization against the breaching party	Not Applicable
Protection for the aggrieved party	Complete

Clause 31 is complete for term specificity, contingency adaptability, and contractual obligatoriness. This clause does not have provision regarding to specific period/ cost/ quantity, obligations of parties, alternative solutions, applicable law, and penalization against breaching parties.

4.33.4 Clause Analysis – Distribution of Rights and Obligations

Analysis as shown in Table 4.103 was done based on the employer, contractor, and S.O. in terms of rights and obligations. Based on the ratio calculated for Clause 31, the minimum ratio obtained for Contractor is 0 which the distribution of rights and obligations is classify under “Very Unbalanced”. This clause is not applicable in the study of the distribution of rights and obligations for Employer and S.O. since they have no rights and no obligations under this clause.

Table 4.103: Distribution of rights and obligations for Clause 31

	Employer	Contractor	S.O.
Rights, R	0	1	0
Obligations, O	0	0	0
R/O	Undefined, ∞	Undefined, ∞	Undefined, ∞
O/R	Undefined, ∞	0.00	Undefined, ∞
Min (R/O, O/R)	Undefined, ∞	0.00	Undefined, ∞
Ratio Classification	Not Applicable	Very Unbalanced	Not Applicable

4.34 Clause 32: Procedure for Claims

4.34.1 Clause Description

Clause 32 consists 6 sub-clauses that covers the notice of claims, contemporary records, substantiation of claims, access to contractor’s books and documents, payment of claims, and action to be taken on failure to comply.

4.34.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.104. Clause 32 has very high ratio on sentences with more than 25 words, while the ratio for other

parameters are low. Thus, with an average ratio of 0.36, this clause is categorised as “Quite Clear”.

Table 4.104: Clarity for Clause 32

Total number of sentences: 22

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	18	0.82
Sentences with cross-reference	11	0.50
Sentences with passive voices	2	0.09
Sentences with negative style	7	0.32
Sentences with wordiness, cliché jargon	2	0.09
Average ratio		0.36 (Quite Clear)

4.34.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.105.

Table 4.105: Completeness for Clause 32

Term Specificity	
Guidelines/ Procedures	Incomplete
Period/ Cost/ Quantity	Complete
Rights of parties	Complete
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Incomplete
Period/ Cost/ Quantity	Complete
Alternative solutions	Not Applicable
Contractual obligatoriness	
Applicable law	Not Applicable
Penalization against the breaching party	Complete
Protection for the aggrieved party	Complete

Clause 32 is complete for term specificity, contingency adaptability, and contractual obligatoriness. This clause fails to include the procedures for the S.O. to provide for approval or disapproval of the claims and procedure for disagreement over the decision.

4.34.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis will be done based on the employer, contractor, and S.O. in terms of rights and obligations.

Table 4.106: Distribution of rights and obligations for Clause 32

	Employer	Contractor	S.O.
Rights, R	0	2	4
Obligations, O	0	9	0
R/O	Undefined, ∞	0.22	Undefined, ∞
O/R	Undefined, ∞	4.50	0.00
Min (R/O, O/R)	Undefined, ∞	0.22	0.00
Ratio Classification	Not Applicable	Unbalanced	Very Unbalanced

Based on the ratio calculated for Clause 32, the minimum ratio obtained for Contractor and S.O. are 0.22 and 0.00 respectively. Thus, the distribution of rights and obligations for Contractor is classify under “Unbalanced”, while S.O. has a “Very Unbalanced” ratio pf rights and obligations. This clause is not applicable in the study of the distribution of rights and obligations for Employer since he has no rights and no obligations under this clause.

4.35 Clause 33: Construction Plant, Temporary Works, Materials and Goods

4.35.1 Clause Description

Clause 33 consists of 6 sub-clauses that explains the exclusive use for the works, passing of property and vesting, employer not liable for damage, conditions for hire of construction plant, re-vesting and removal, and incorporation of clause in sub-contracts.

4.35.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.107. Clause 33 has very high ratio on sentences with more than 25 words. The ratio for other parameters are lower than 0.5. Thus, with an average ratio of 0.39, this clause is categorised as “Quite Clear”.

Table 4.107: Clarity for Clause 33

Total number of sentences: 14

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	12	0.86
Sentences with cross-reference	6	0.43
Sentences with passive voices	2	0.14
Sentences with negative style	5	0.36
Sentences with wordiness, cliché jargon	2	0.14
Average ratio		0.39 (Quite Clear)

4.35.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.108.

Table 4.108: Completeness for Clause 33

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Rights of parties	Complete
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Not Applicable
Alternative solutions	Not Applicable

Table 4.108 continued

Contractual obligatoriness	
Applicable law	Not Applicable
Penalization against the breaching party	Incomplete
Protection for the aggrieved party	Incomplete

Clause 33 is complete for term specificity and contingency adaptability, but incomplete in contractual obligatoriness. The clause covers the ownership issues but the legal title of the items still remains with the contractor, which may not appropriately cover the Employer as it may seem. The clause also does not cover the matters on the payment made on the materials and good on site.

4.35.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis will be done based on the employer, contractor, and S.O. in terms of rights and obligations.

Table 4.109: Distribution of rights and obligations for Clause 33

	Employer	Contractor	S.O.
Rights, R	2	0	0
Obligations, O	0	1	0
R/O	Undefined, ∞	0.00	Undefined, ∞
O/R	0.00	Undefined, ∞	Undefined, ∞
Min (R/O, O/R)	0.00	0.00	Undefined, ∞
Ratio Classification	Very Unbalanced	Very Unbalanced	Not Applicable

Based on the ratio calculated for Clause 33, the minimum ratio obtained for both Employer and Contractor are 0.00. Thus, the distribution of rights and obligations for Employer and Contractor are classify under “Very Unbalanced”. This clause is not

applicable in the study of the distribution of rights and obligations for S.O. since he has no rights and no obligations under this clause.

4.36 Clause 34: General Responsibilities

4.36.1 Clause Description

Clause 34 consists of 2 sub-clauses that contain the care of the works and the responsibility to rectify damage, loss or injury.

4.36.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.110.

Table 4.110: Clarity for Clause 34

Total number of sentences: 5

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	5	1.00
Sentences with cross-reference	2	0.40
Sentences with passive voices	1	0.20
Sentences with negative style	2	0.40
Sentences with wordiness, cliché jargon	0	0.00
Average ratio		0.40 (Quite Clear)

Every sentence in Clause 34 has more than 25 words. The ratio for other parameters are relatively lower. Thus, with an average ratio of 0.40, this clause is categorised as “Quite Clear”.

4.36.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.111.

Table 4.111: Completeness for Clause 34

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Rights of parties	Not Applicable
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Alternative solutions	Not Applicable
Contractual obligatoriness	
Applicable law	Not Applicable
Penalization against the breaching party	Complete
Protection for the aggrieved party	Complete

Clause 34 is complete for term specificity, contingency adaptability, and contractual obligatoriness. This clause does not have provision regarding to rights of parties, alternative solutions, and applicable law. In addition, usage of words such as ‘satisfaction of the SO’ is seen as ambiguous and definition of excepted risk is not provided.

4.36.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis will be done based on the employer, contractor, and S.O. in terms of rights and obligations. Based on the ratio calculated for Clause 34, the minimum ratio for both Contractor and S.O. are 0.00. Thus, the distribution of rights and obligations for Contractor and S.O. are classify under “Very Unbalanced”. This clause is not applicable in the study of the distribution of rights and obligations for Employer since he has no rights and no obligations under this clause.

Table 4.112: Distribution of rights and obligations for Clause 34

	Employer	Contractor	S.O.
Rights, R	0	0	0
Obligations, O	0	5	1
R/O	0.00	0.00	0.00
O/R	Undefined, ∞	Undefined, ∞	Undefined, ∞
Min (R/O, O/R)	Undefined, ∞	0.00	0.00
Ratio Classification	Not Applicable	Very Unbalanced	Very Unbalanced

4.37 Clause 35: Indemnity Provisions

4.37.1 Clause Description

Clause 35 consists of 5 sub-clauses that explains the injury to persons, damage to property, contribution, contractor to rectify damage, and damage to property of Employer or relevant authority.

4.37.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.113.

Table 4.113: Clarity for Clause 35

Total number of sentences: 10

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	9	0.90
Sentences with cross-reference	7	0.70
Sentences with passive voices	3	0.30
Sentences with negative style	1	0.10
Sentences with wordiness, cliché jargon	1	0.10
Average ratio		0.42 (Clear)

Clause 35 has highest ratio on sentences with more than 25 words, followed by sentences with cross-reference. However, the ratio for other parameters are very low. Thus, with an average ratio of 0.42, this clause is categorised as “Clear”.

4.37.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.114.

Table 4.114: Completeness for Clause 35

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Rights of parties	Complete
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Not Applicable
Alternative solutions	Complete
Contractual obligatoriness	
Applicable law	Not Applicable
Penalization against the breaching party	Complete
Protection for the aggrieved party	Complete

Clause 31 is complete for term specificity, contingency adaptability, and contractual obligatoriness. This clause does not have provision regarding to specific period/ cost/ quantity, and applicable law.

4.37.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis will be done based on the employer, contractor, and S.O. in terms of rights and obligations.

Table 4.115: Distribution of rights and obligations for Clause 35

	Employer	Contractor	S.O.
Rights, R	3	1	1
Obligations, O	1	3	1
R/O	3.00	0.33	1.00
O/R	0.33	3.00	1.00
Min (R/O, O/R)	0.33	0.33	1.00
Ratio Classification	Unbalanced	Unbalanced	Very Good Balanced

Based on the ratio calculated for Clause 35, the minimum ratio obtained for both Employer and Contractor is 0.33, while for S.O. is 1.00. Thus, the distribution of rights and obligations for Employer and Contractor is classify under “Unbalanced”, while S.O. have a “Very Good Balanced” ratio of rights and obligations.

4.38 Clause 36: Insurance for Personal Injury and Property Damage

4.38.1 Clause Description

Clause 36 consists 3 sub-clauses that describes the insurance for personal injury and property damage which cover the taking of third party liability insurance, deposition of the policies and the defaults in insuring.

4.38.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.116. Clause 36 has higher ratio on sentences with more than 25 words and sentences with cross-reference. However, the ratio for other parameters are very low. Thus, with an average ratio of 0.30, this clause is categorised as “Quite Clear”.

Table 4.116: Clarity for Clause 36

Total number of sentences: 8

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	6	0.75
Sentences with cross-reference	4	0.50
Sentences with passive voices	2	0.25
Sentences with negative style	0	0.00
Sentences with wordiness, cliché jargon	0	0.00
Average ratio		0.30 (Quite Clear)

4.38.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.117.

Table 4.117: Completeness for Clause 36

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Rights of parties	Complete
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Not Applicable
Alternative solutions	Complete
Contractual obligatoriness	
Applicable law	Not Applicable
Penalization against the breaching party	Not Applicable
Protection for the aggrieved party	Complete

Clause 36 is complete for term specificity, contingency adaptability, and contractual obligatoriness. This clause does not have provision regarding to specific period/ cost/ quantity, applicable law, and penalization against breaching parties.

4.38.4 Clause Analysis – Distribution of Rights and Obligations

Analysis as shown in Table 4.118 was done based on the employer, contractor, and S.O. in terms of rights and obligations. Based on the ratio calculated for Clause 36, the minimum ratio obtained for both Employer and Contractor are 0.00. Thus, the distribution of rights and obligations for Employer and Contractor is classify under “Very Unbalanced”. This clause is not applicable in the study of the distribution of rights and obligations for S.O. since he has no rights and no obligations under this clause.

Table 4.118: Distribution of rights and obligations for Clause 36

	Employer	Contractor	S.O.
Rights, R	1	0	0
Obligations, O	0	3	0
R/O	Undefined, ∞	0.00	Undefined, ∞
O/R	0.00	Undefined, ∞	Undefined, ∞
Min (R/O, O/R)	0.00	0.00	Undefined, ∞
Ratio Classification	Very Unbalanced	Very Unbalanced	Not Applicable

4.39 Clause 37: Insurance for Workmen

4.39.1 Clause Description

Clause 37 consists 4 sub-clauses that covers the employee’s social security scheme for local workmen, workmen’s compensation insurance for foreign workers, insurance for local workmen not subject to SOCSO, and default in compliance.

4.39.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.119. Clause 37 has higher ratio on sentences with more than 25 words and sentences with cross-reference.

However, the ratio for other parameters are very low. Thus, with an average ratio of 0.36, this clause is categorised as “Quite Clear”.

Table 4.119: Clarity for Clause 37

Total number of sentences: 14

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	11	0.79
Sentences with cross-reference	10	0.71
Sentences with passive voices	2	0.14
Sentences with negative style	2	0.14
Sentences with wordiness, cliché jargon	0	0.00
Average ratio		0.36 (Quite Clear)

4.39.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.120.

Table 4.120: Completeness for Clause 37

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Rights of parties	Complete
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Not Applicable
Alternative solutions	Not Applicable
Contractual obligatoriness	
Applicable law	Complete
Penalization against the breaching party	Complete
Protection for the aggrieved party	Not Applicable

Clause 37 is complete for term specificity, contingency adaptability, and contractual obligatoriness. This clause does not have provision regarding to specific period/ cost/ quantity, alternative solutions, and protection for the aggrieved party.

4.39.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis will be done based on the employer, contractor, and S.O. in terms of rights and obligations.

Table 4.121: Distribution of rights and obligations for Clause 37

	Employer	Contractor	S.O.
Rights, R	1	0	0
Obligations, O	0	10	1
R/O	Undefined, ∞	0.00	0.00
O/R	0.00	Undefined, ∞	Undefined, ∞
Min (R/O, O/R)	0.00	0.00	0.00
Ratio Classification	Very Unbalanced	Very Unbalanced	Very Unbalanced

Based on the ratio calculated for Clause 37, the minimum ratio obtained for all contracting parties are 0.00. Thus, the distribution of rights and obligations for Employer, Contractor and S.O. are classify under “Very Unbalanced”.

4.40 Clause 38: Insurance of the Works

4.40.1 Clause Description

Clause 38 consists 3 alternative clauses which are insurance of the works by the Contractor, insurance of the works by the Employer or insurance of existing building or structure by the employer.

4.40.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.122. Clause 38 has very ratio on sentences with more than 25 words and sentences with cross-reference. However, the ratio for other parameters are low, but with an average ratio of 0.42, this clause is categorised as “Clear”.

Table 4.122: Clarity for Clause 38

Total number of sentences: 50

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	46	0.92
Sentences with cross-reference	34	0.68
Sentences with passive voices	15	0.30
Sentences with negative style	11	0.22
Sentences with wordiness, cliché jargon	0	0.00
Average ratio		0.42 (Clear)

4.40.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.123.

Table 4.123: Completeness for Clause 38

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Rights of parties	Complete
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Alternative solutions	Complete

Table 4.123 continued

Contractual obligatoriness	
Applicable law	Complete
Penalization against the breaching party	Complete
Protection for the aggrieved party	Complete

Clause 38 is complete for every parameters of completeness, explicitly term specificity, contingencies adaptability, and contractual obligatoriness.

4.40.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis will be done based on the employer, contractor, and S.O. in terms of rights and obligations.

Table 4.124: Distribution of rights and obligations for Clause 38

	Employer	Contractor	S.O.
Rights, R	2	5	0
Obligations, O	8	13	1
R/O	0.25	0.38	0.00
O/R	4.00	2.60	Undefined, ∞
Min (R/O, O/R)	0.25	0.38	0.00
Ratio Classification	Unbalanced	Unbalanced	Very Unbalanced

Based on the ratio calculated for Clause 38, the minimum ratio obtained for Employer and Contractor is 0.25 and 0.38 respectively, while for S.O. is 0.00. Thus, Employer and Contractor have an “Unbalanced” distribution ratio with more obligations than rights, while S.O. has a “Very Unbalanced” ratio of rights and obligations. Both the Employer and Contractor have the rights to take out the insurance under certain conditions. Also, the employer is obliged to maintain the said insurance while the contractor shall be fully responsible for any insurance excess.

4.41 Clause 39: Antiquities and Fossils

4.41.1 Clause Description

Clause 39 consists only one sub-clause which explains the property and protection of Discovery.

4.41.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.125.

Table 4.125: Clarity for Clause 39

Total number of sentences: 3

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	2	0.67
Sentences with cross-reference	0	0.00
Sentences with passive voices	2	0.67
Sentences with negative style	0	0.00
Sentences with wordiness, cliché jargon	1	0.33
Average ratio		0.33 (Quite Clear)

Clause 39 has high ratio on sentences with more than 25 words and sentences with passive voices. Thus, with an average ratio of 0.33, this clause is categorised as “Quite Clear”.

4.41.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.126. Clause 39 is complete for term specificity and contractual obligatoriness. This clause does not have provision regarding to rights of parties, contingencies adaptability, applicable law, and penalization against breaching parties.

Table 4.126: Completeness for Clause 39

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Rights of parties	Not Applicable
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Not Applicable
Period/ Cost/ Quantity	Not Applicable
Alternative solutions	Not Applicable
Contractual obligatoriness	
Applicable law	Not Applicable
Penalization against the breaching party	Not Applicable
Protection for the aggrieved party	Complete

4.41.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis will be done based on the employer, contractor, and S.O. in terms of rights and obligations.

Table 4.127: Distribution of rights and obligations for Clause 39

	Employer	Contractor	S.O.
Rights, R	0	0	0
Obligations, O	0	2	0
R/O	Undefined, ∞	0.00	Undefined, ∞
O/R	Undefined, ∞	Undefined, ∞	Undefined, ∞
Min (R/O, O/R)	Undefined, ∞	0.00	Undefined, ∞
Ratio Classification	Not Applicable	Very Unbalanced	Not Applicable

Based on the ratio calculated for Clause 39, the minimum ratio obtained for Contractor is 0 which the distribution of rights and obligations is classify under “Very Unbalanced”.

This clause is not applicable in the study of the distribution of rights and obligations for Employer and S.O. since they have no rights and no obligations under this clause.

4.42 Clause 40: Assignment and Sub-Contracting

4.42.1 Clause Description

Clause 40 consists 4 sub-clauses that covers the assignment by contractor, assignment by employer, documents on assignment, and sub-contracting.

4.42.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.128.

Table 4.128: Clarity for Clause 40

Total number of sentences: 13

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	9	0.69
Sentences with cross-reference	2	0.15
Sentences with passive voices	3	0.23
Sentences with negative style	7	0.54
Sentences with wordiness, cliché jargon	1	0.08
Average ratio		0.34 (Quite Clear)

Clause 40 has high ratio on sentences with more than 25 words, followed by sentences with negative style. However, the ratio for other parameters are relatively low. Thus, with an average ratio of 0.34, this clause is categorised as “Quite Clear”.

4.42.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.129. Clause 40 is complete for term specificity and contractual obligatoriness, but incomplete for contingency adaptability. This clause did not clarify the unreasonable situation and does not have provision regarding to alternative solutions, applicable law, and penalization against breaching parties.

Table 4.129: Completeness for Clause 40

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Rights of parties	Complete
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Incomplete
Period/ Cost/ Quantity	Not Applicable
Alternative solutions	Not Applicable
Contractual obligatoriness	
Applicable law	Not Applicable
Penalization against the breaching party	Not Applicable
Protection for the aggrieved party	Complete

4.42.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis will be done based on the employer, contractor, and S.O. in terms of rights and obligations. Based on the ratio calculated for Clause 40, the minimum ratio obtained for both Employer and Contractor are 0.00 and 1.00 respectively. Thus, Employer has a “Very Unbalanced” distribution of rights and obligations, while Contractor has a “Very Good Balanced” distribution. It is found that, there is no rights given to Employer to deal with sub-contractors directly in the matters of instructions, payment,

variations etc. This clause is not applicable in the study of the distribution of rights and obligations for S.O. since he has no rights and no obligations under this clause.

Table 4.130: Distribution of rights and obligations for Clause 40

	Employer	Contractor	S.O.
Rights, R	0	2	0
Obligations, O	1	2	0
R/O	0.00	1.00	Undefined, ∞
O/R	Undefined, ∞	1.00	Undefined, ∞
Min (R/O, O/R)	0.00	1.00	Undefined, ∞
Ratio Classification	Very Unbalanced	Very Good Balanced	Not Applicable

4.43 Clause 41: Prime Cost and Provisional Sums

4.43.1 Clause Description

Clause 41 consists 2 sub-clauses that are prime cost sum and provisional sums.

4.43.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.131.

Table 4.131: Clarity for Clause 41

Total number of sentences: 6

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	6	1.00
Sentences with cross-reference	3	0.50
Sentences with passive voices	1	0.17
Sentences with negative style	3	0.50
Sentences with wordiness, cliché jargon	0	0.00
Average ratio		0.43 (Clear)

Every sentence in Clause 41 has more than 25 words. Sentences with cross-reference and sentences with negative style have same ratio of 0.5. Thus, with an average ratio of 0.43, this clause is categorised as “Clear”.

4.43.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.132.

Table 4.132: Completeness for Clause 41

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Not Applicable
Rights of parties	Complete
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Not Applicable
Alternative solutions	Not Applicable
Contractual obligatoriness	
Applicable law	Not Applicable
Penalization against the breaching party	Not Applicable
Protection for the aggrieved party	Not Applicable

Clause 41 is complete for term specificity and contingency adaptability. This clause does not have provision regarding to specific period/ cost/ quantity, alternative solutions, and contractual obligatoriness.

4.43.4 Clause Analysis – Distribution of Rights and Obligations

Analysis as shown in Table 4.133 was done based on the employer, contractor, and S.O. in terms of rights and obligations.

Table 4.133: Distribution of rights and obligations for Clause 41

	Employer	Contractor	S.O.
Rights, R	0	2	2
Obligations, O	0	0	1
R/O	Undefined, ∞	Undefined, ∞	2.00
O/R	Undefined, ∞	0.00	0.50
Min (R/O, O/R)	Undefined, ∞	0.00	0.50
Ratio Classification	Not Applicable	Very Unbalanced	Balanced

Based on the ratio calculated for Clause 41, the minimum ratio obtained for Contractor and S.O. are 0.0 and 0.50 respectively. Thus, the distribution of rights and obligations for Contractor is classify under “Very Unbalanced”, while S.O. has a “Balanced” ratio of rights and obligations. This clause is not applicable in the study of the distribution of rights and obligations for Employer since he has no rights and no obligations under this clause.

4.44 Clause 42: Payment

4.44.1 Clause Description

Clause 42 consists 13 sub-clauses that describe statement of work done, valuation and interim certificates, retention monies, correction of certificates, statement at completion, penultimate certificate, final claim statement, final account and final certificate, period of honouring certificate, suspension for non-payment, deemed payment, delay in certification, and effect of payment other payment of final certificate.

4.44.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.134.

Table 4.134: Clarity for Clause 42

Total number of sentences: 80

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	50	0.63
Sentences with cross-reference	36	0.45
Sentences with passive voices	10	0.13
Sentences with negative style	27	0.34
Sentences with wordiness, cliché jargon	4	0.05
Average ratio		0.32 (Quite Clear)

Clause 42 has higher ratio on sentences with more than 25 words, while the ratio for other parameters are relatively low. Thus, with an average ratio of 0.32, this clause is categorised as “Quite Clear”.

4.44.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.135.

Table 4.135: Completeness for Clause 42

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Rights of parties	Complete
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Alternative solutions	Complete
Contractual obligatoriness	
Applicable law	Complete
Penalization against the breaching party	Complete
Protection for the aggrieved party	Complete

Clause 42 is complete for every parameters of completeness, explicitly term specificity, contingencies adaptability, and contractual obligatoriness.

4.44.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis will be done based on the employer, contractor, and S.O. in terms of rights and obligations.

Table 4.136: Distribution of rights and obligations for Clause 42

	Employer	Contractor	S.O.
Rights, R	4	4	9
Obligations, O	7	9	10
R/O	0.57	0.44	0.90
O/R	1.75	2.25	1.11
Min (R/O, O/R)	0.57	0.44	0.90
Ratio Classification	Balanced	Balanced	Very Good Balanced

Based on the ratio calculated for Clause 42, the minimum ratio obtained for Employer, Contractor, and S.O. are 0.57, 0.44 and 0.90 respectively. Thus, the distribution of rights and obligations for Employer and Contractor are classify under “Balanced”, while S.O. have a “Very Good Balanced” ratio of rights and obligations.

4.45 Clause 43: Effect of S.O.’s Certificate

4.45.1 Clause Description

Clause 43 consists 2 sub-clauses that explain the effect of S.O.’s certificate.

4.45.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.137. Clause 43 has very high ratio on sentences with more than 25 words, followed by sentences with cross-reference. This clause generally has long sentences and structured in a way that is not readily understandable. The ratio for other parameters are relatively low, hence, with an average ratio of 0.34, this clause is categorised as “Quite Clear”.

Table 4.137: Clarity for Clause 43

Total number of sentences: 10

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	8	0.80
Sentences with cross-reference	6	0.60
Sentences with passive voices	1	0.10
Sentences with negative style	2	0.20
Sentences with wordiness, cliché jargon	0	0.00
Average ratio		0.34 (Quite Clear)

4.45.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.138.

Table 4.138: Completeness for Clause 43

Term Specificity	
Guidelines/ Procedures	Incomplete
Period/ Cost/ Quantity	Complete
Rights of parties	Not Applicable
Obligations of parties	Not Applicable
Contingency adaptability	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Alternative solutions	Not Applicable

Table 4.138 continued

Contractual obligatoriness	
Applicable law	Not Applicable
Penalization against the breaching party	Not Applicable
Protection for the aggrieved party	Not Applicable

Clause 43 is complete for term specificity and contingency adaptability. This clause mentioned that the Final Certificate is conclusive evidence, but it is unclear of what the certificate is conclusive evidence with respect to. Other than that, this clause does not take any of the SO's certificate as conclusive evidence, which contradicts the effect of final certificate where it is conclusive evidence in any proceedings.

4.45.4 Clause Analysis – Distribution of Rights and Obligations

Clause 44 only declare that no certificate of the S.O. under any provision of the Contract shall be considered as conclusive evidence as to the sufficiency of any design, works executed, or any Equipment, materials or goods to which it relates, nor shall it relieve the Contractor from his liability to amend or make good Defects and describe on the effect of final certificate in the contract. Since the rights and obligations of each contracting party are not stated, thus, this clause will be excluded from this study.

4.46 Clause 44: Determination by Employer

4.46.1 Clause Description

Clause 44 consists 5 sub-clauses that are determination due to default by contractor, determination due to bankruptcy or insolvency, effects of determination of contractor's employment, certificate of termination costs and notices under Clause 44.

4.46.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.139.

Table 4.139: Clarity for Clause 44

Total number of sentences: 54

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	17	0.31
Sentences with cross-reference	17	0.31
Sentences with passive voices	1	0.02
Sentences with negative style	16	0.30
Sentences with wordiness, cliché jargon	0	0.00
Average ratio		0.19 (Very Clear)

Clause 44 has higher ratio on sentences with more than 25 words and sentences with cross-reference, followed by sentences with negative style. Many sentences were also long and hence, difficult to read. But with an average ratio of 0.18, this clause is categorised as “Very Clear”. However, usage of words such as ‘due diligence’, ‘unreasonably’ or ‘vexatiously’ in the absence of better words is rather ambiguous.

4.46.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.140. Clause 44 is complete for term specificity, contingency adaptability, and contractual obligatoriness. This clause does not have provision regarding to the Contractor’s disagreement to the grounds of determination and ways of reaching consensus before the clause of determination is activated.

Table 4.140: Completeness for Clause 44

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Rights of parties	Incomplete
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Incomplete
Period/ Cost/ Quantity	Complete
Alternative solutions	Complete
Contractual obligatoriness	
Applicable law	Not Applicable
Penalization against the breaching party	Complete
Protection for the aggrieved party	Complete

4.46.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis will be done based on the employer, contractor, and S.O. in terms of rights and obligations.

Table 4.141: Distribution of rights and obligations for Clause 44

	Employer	Contractor	S.O.
Rights, R	8	0	2
Obligations, O	1	4	3
R/O	8.00	0.00	1.00
O/R	0.13	Undefined, ∞	1.00
Min (R/O, O/R)	0.13	0.00	1.00
Ratio Classification	Unbalanced	Very Unbalanced	Very Good Balanced

Based on the ratio calculated for Clause 44, the minimum ratio obtained for Employer and S.O. are 0.13 and 1.00 respectively, while for Contractor is 0.00. Thus, the distribution of rights and obligations for Employer and S.O. are classify under “Unbalanced” and “Very

Good balanced” respectively, while Contractor have an “Very Unbalanced” ratio of rights and obligations.

4.47 Clause 45: Quality in Construction

4.47.1 Clause Description

Clause 45 consists 4 sub-clauses that are determination by Contractor with notice, determination by Contractor without notice, and effects of determination.

4.47.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.142.

Table 4.142: Clarity for Clause 45

Total number of sentences: 34

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	13	0.38
Sentences with cross-reference	15	0.44
Sentences with passive voices	1	0.03
Sentences with negative style	16	0.47
Sentences with wordiness, cliché jargon	0	0.00
Average ratio		0.26 (Quite Clear)

Clause 45 has higher ratio on sentences with negative style, followed by sentences with cross-reference and sentences with more than 25 words. Thus, with an average ratio of 0.26, this clause is categorised as “Quite Clear”.

4.47.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.143.

Table 4.143: Completeness for Clause 45

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Not Applicable
Rights of parties	Complete
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Alternative solutions	Complete
Contractual obligatoriness	
Applicable law	Not Applicable
Penalization against the breaching party	Complete
Protection for the aggrieved party	Complete

Clause 45 is complete for term specificity, contingency adaptability, and contractual obligatoriness. This clause does not have provision regarding to specific period/ cost/ quantity and applicable law.

4.47.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis as in Table 4.144 will be done based on the employer, contractor, and S.O. in terms of rights and obligations.

Table 4.144: Distribution of rights and obligations for Clause 45

	Employer	Contractor	S.O.
Rights, R	0	5	0
Obligations, O	0	3	1
R/O	Undefined, ∞	1.67	0.00
O/R	Undefined, ∞	0.60	Undefined, ∞
Min (R/O, O/R)	Undefined, ∞	0.60	0.00
Ratio Classification	Very Unbalanced	Good Balanced	Very Unbalanced

Based on the ratio calculated for Clause 45, the minimum ratio obtained for Employer and S.O. are undefined and 0.00 respectively, while for Contractor is 0.60. Thus, the distribution of rights and obligations for Employer and S.O. are classify under “Very Unbalanced” and “Very Unbalanced” respectively, while Contractor have a “Good Balanced” ratio of rights and obligations.

4.48 Clause 46: Termination without Default

4.48.1 Clause Description

Clause 46 consists 2 sub-clauses that are right of employer to terminate and effects of termination.

4.48.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.145.

Table 4.145: Clarity for Clause 46

Total number of sentences: 2

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	1	0.50
Sentences with cross-reference	1	0.50
Sentences with passive voices	1	0.50
Sentences with negative style	1	0.50
Sentences with wordiness, cliché jargon	0	0.00
Average ratio		0.40 (Quite Clear)

Clause 46 has same ratio on sentences with more than 25 words, sentences with cross-reference, sentences with passive voices, and sentences with negative style, which is 0.5. With an average ratio of 0.40, this clause is categorised as “Quite Clear”.

4.48.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.146.

Table 4.146: Completeness for Clause 46

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Rights of parties	Complete
Obligations of parties	Not Applicable
Contingency adaptability	
Guidelines/ Procedures	Not Applicable
Period/ Cost/ Quantity	Not Applicable
Alternative solutions	Not Applicable
Contractual obligatoriness	
Applicable law	Not Applicable
Penalization against the breaching party	Not Applicable
Protection for the aggrieved party	Not Applicable

Clause 46 is complete for term specificity. This clause does not have provision regarding to obligations of party, contingencies adaptability, and contractual obligatoriness.

4.48.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis was done based on the employer, contractor, and S.O. in terms of rights and obligations. Based on the ratio calculated for Clause 46, the minimum ratio obtained for Contractor and S.O. are undefined, while for Employer is 0.00. Thus, the distribution of rights and obligations for Contractor and S.O. are classify under “Not Applicable”, while Employer have a “Very Unbalanced” ratio of rights and obligations.

Table 4.147: Distribution of rights and obligations for Clause 46

	Employer	Contractor	S.O.
Rights, R	1	0	0
Obligations, O	0	0	0
R/O	Undefined, ∞	Undefined, ∞	Undefined, ∞
O/R	0.00	Undefined, ∞	Undefined, ∞
Min (R/O, O/R)	0.00	Undefined, ∞	Undefined, ∞
Ratio Classification	Very Unbalanced	Not Applicable	Not Applicable

4.49 Clause 47: Settlement of Disputes

4.49.1 Clause Description

Clause 47 consists 4 sub-clauses that are reference to the Superintending Officer, reference to Mediation, reference to arbitration and settlement of dispute in the event of determination.

4.49.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.148.

Table 4.148: Clarity for Clause 47

Total number of sentences: 33

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	20	0.61
Sentences with cross-reference	13	0.39
Sentences with passive voices	8	0.24
Sentences with negative style	15	0.45
Sentences with wordiness, cliché jargon	2	0.06
Average ratio		0.35 (Quite Clear)

Clause 47 has higher ratio on sentences with more than 25 words, while the ratio for other parameters are relatively low. Thus, with an average ratio of 0.35, this clause is categorised as “Quite Clear”.

4.49.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.149.

Table 4.149: Completeness for Clause 47

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Rights of parties	Complete
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Alternative solutions	Not Applicable
Contractual obligatoriness	
Applicable law	Complete
Penalization against the breaching party	Not Applicable
Protection for the aggrieved party	Complete

Clause 47 is complete for term specificity, contingency adaptability, and contractual obligatoriness. This clause does not have provision regarding to alternative solutions and penalization against breaching party.

4.49.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis was done based on the employer, contractor, and S.O. in terms of rights and obligations.

Table 4.150: Distribution of rights and obligations for Clause 47

	Employer	Contractor	S.O.
Rights, R	4	4	0
Obligations, O	4	5	2
R/O	1.00	0.80	0.00
O/R	1.00	1.25	Undefined, ∞
Min (R/O, O/R)	1.00	0.80	0.00
Ratio Classification	Very Good Balanced	Very Good Balanced	Very Unbalanced

Based on the ratio calculated for Clause 47, the minimum ratio obtained for Employer, Contractor and S.O. are 1.00, 0.80 and 0.00 respectively. Thus, the distribution of rights and obligations for Employer and Contractor are classify under “Very Good balanced”, while S.O. has a “Very Unbalanced” ratio of rights and obligations. In this case, CIDB 2000 did not bias on any side, both the party are given same rights to refer the dispute to mediation if they dissatisfy the decision by S.O., and to arbitration if they dissatisfy the decision results from mediation.

4.50 Clause 48: Recovery by the Employer

4.50.1 Clause Description

Clause 48 gives the Employer right to recover any amount from the Contractor.

4.50.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.151. Every sentence in Clause 48 are sentences with passive voices, but only one of the sentences is more than 25 words. Thus, with an average ratio of 0.30, this clause is categorised as “Quite Clear”.

Table 4.151: Clarity for Clause 48

Total number of sentences: 2

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	1	0.50
Sentences with cross-reference	0	0.00
Sentences with passive voices	2	1.00
Sentences with negative style	0	0.00
Sentences with wordiness, cliché jargon	0	0.00
Average ratio		0.30 (Quite Clear)

4.50.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.152.

Table 4.152: Completeness for Clause 48

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Rights of parties	Complete
Obligations of parties	Not Applicable
Contingency adaptability	
Guidelines/ Procedures	Not Applicable
Period/ Cost/ Quantity	Not Applicable
Alternative solutions	Complete
Contractual obligatoriness	
Applicable law	Not Applicable
Penalization against the breaching party	Not Applicable
Protection for the aggrieved party	Not Applicable

Clause 48 is complete for term specificity and contingency adaptability. This clause does not cover the procedures for recovery and Contractor's right to recovery of any amount

due to him especially after determination by contractor and after proceedings for dispute resolution.

4.50.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis was done based on the employer, contractor, and S.O. in terms of rights and obligations.

Table 4.153: Distribution of rights and obligations for Clause 48

	Employer	Contractor	S.O.
Rights, R	1	0	0
Obligations, O	0	0	0
R/O	Undefined, ∞	Undefined, ∞	Undefined, ∞
O/R	0.00	Undefined, ∞	Undefined, ∞
Min (R/O, O/R)	0.00	Undefined, ∞	Undefined, ∞
Ratio Classification	Very Unbalanced	Not Applicable	Not Applicable

Based on the ratio calculated for Clause 48, the minimum ratio obtained for Contractor and S.O. are undefined, while for Employer is 0.00. Thus, the distribution of rights and obligations for Contractor and S.O. are classify under “Not Applicable”, while Employer have a “Very Unbalanced” ratio of rights and obligations.

4.51 Clause 49: Governing Law

4.51.1 Clause Description

Clause 49 declares the law that governing the Contract which is the law of Malaysia and any action or proceedings arising out of the Contract has to submit to the jurisdiction of the Malaysian Courts.

4.51.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.154.

Table 4.154: Clarity for Clause 49

Total number of sentences: 1

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	1	1.00
Sentences with cross-reference	0	0.00
Sentences with passive voices	0	0.00
Sentences with negative style	0	0.00
Sentences with wordiness, cliché jargon	0	0.00
Average ratio		0.20 (Very Clear)

Clause 49 has only one sentence and the sentence is more than 25 words. However, it does not include cross-reference, negation words, jargon or cliché and it is not in passive voice. Thus, with an average ratio of 0.20, this clause is categorised as “Very Clear”.

4.51.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.155.

Table 4.155: Completeness for Clause 49

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Not Applicable
Rights of parties	Not Applicable
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Not Applicable
Period/ Cost/ Quantity	Not Applicable
Alternative solutions	Not Applicable

Table 4.155 continued

Contractual obligatoriness	
Applicable law	Complete
Penalization against the breaching party	Not Applicable
Protection for the aggrieved party	Not Applicable

Clause 49 is complete for term specificity and contractual obligatoriness. This clause does not have provision regarding to specific period/ cost/ quantity, rights of parties, contingency adaptability, penalization against the breaching party, and protection for the aggrieved party.

4.51.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis as in Table 4.156 will be done based on the employer, contractor, and S.O. in terms of rights and obligations. Based on the ratio calculated for Clause 49, the minimum ratio obtained for all contracting parties are 0 which falls under the category of “Very Unbalanced”.

Table 4.156: Distribution of rights and obligations for Clause 49

	Employer	Contractor	S.O.
Rights, R	0	0	0
Obligations, O	1	1	1
R/O	0.00	0.00	0.00
O/R	Undefined, ∞	Undefined, ∞	Undefined, ∞
Min (R/O, O/R)	0.00	0.00	0.00
Ratio Classification	Very Unbalanced	Very Unbalanced	Very Unbalanced

4.52 Clause 50: Taxes and Duties

4.52.1 Clause Description

Clause 50 declares on payment of custom duties and taxes as an obligation for the Contractor.

4.52.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.157.

Table 4.157: Clarity for Clause 50

Total number of sentences: 5

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	1	0.20
Sentences with cross-reference	0	0.00
Sentences with passive voices	2	0.40
Sentences with negative style	0	0.00
Sentences with wordiness, cliché jargon	0	0.00
Average ratio		0.12 (Very Clear)

Clause 50 has higher ratio on sentences with passive voices, followed by sentences with more than 25 words, while the ratio for other parameters are zero. Thus, with an average ratio of 0.18, this clause is categorised as “Very Clear”.

4.52.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.158.

Table 4.158: Completeness for Clause 50

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Not Applicable
Rights of parties	Not Applicable
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Not Applicable
Period/ Cost/ Quantity	Not Applicable
Alternative solutions	Not Applicable

Table 4.158 continued

Contractual obligatoriness	
Applicable law	Complete
Penalization against the breaching party	Not Applicable
Protection for the aggrieved party	Not Applicable

Clause 50 is complete for term specificity and contractual obligatoriness. This clause does not have provision regarding to specific period/ cost/ quantity, rights of parties, contingency adaptability, penalization against the breaching party, and protection for the aggrieved party.

4.52.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis will be done based on the employer, contractor, and S.O. in terms of rights and obligations.

Table 4.159: Distribution of rights and obligations for Clause 50

	Employer	Contractor	S.O.
Rights, R	0	0	0
Obligations, O	0	3	0
R/O	Undefined, ∞	0.00	Undefined, ∞
O/R	Undefined, ∞	Undefined, ∞	Undefined, ∞
Min (R/O, O/R)	Undefined, ∞	0.00	Undefined, ∞
Ratio Classification	Not Applicable	Very Unbalanced	Not Applicable

Based on the ratio calculated for Clause 50, the minimum ratio obtained for Contractor is 0 which the distribution of rights and obligations is classify under “Very Unbalanced”. This clause is not applicable in the study of the distribution of rights and obligations for Employer and S.O. since they have no rights and no obligations under this clause.

4.53 Clause 51: Miscellaneous Provisions

4.53.1 Clause Description

Clause 51 consists 4 sub-clauses that are business ethics, declaration against waiver, notice of garnishment and stamp duties.

4.53.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.160. Clause 51 has higher ratio on sentences with more than 25 words and sentences with negative style. However, the ratio for other parameters are very low. Thus, with an average ratio of 0.32, this clause is categorised as “Quite Clear”.

Table 4.160: Clarity for Clause 51

Total number of sentences: 5

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	4	0.80
Sentences with cross-reference	0	0.00
Sentences with passive voices	1	0.20
Sentences with negative style	3	0.60
Sentences with wordiness, cliché jargon	0	0.00
Average ratio		0.32 (Quite Clear)

4.53.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.161. Clause 51 is complete for term specificity and contractual obligatoriness. This clause does not have provision regarding to specific period/ cost/ quantity, rights of parties, contingency adaptability, penalization against the breaching party, and protection for the aggrieved party.

Table 4.161: Completeness for Clause 51

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Not Applicable
Rights of parties	Not Applicable
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Not Applicable
Period/ Cost/ Quantity	Not Applicable
Alternative solutions	Not Applicable
Contractual obligatoriness	
Applicable law	Complete
Penalization against the breaching party	Not Applicable
Protection for the aggrieved party	Not Applicable

4.53.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis will be done based on the employer, contractor, and S.O. in terms of rights and obligations.

Table 4.162: Distribution of rights and obligations for Clause 51

	Employer	Contractor	S.O.
Rights, R	0	0	0
Obligations, O	1	0	0
R/O	0.00	Undefined, ∞	Undefined, ∞
O/R	Undefined, ∞	Undefined, ∞	Undefined, ∞
Min (R/O, O/R)	0.00	Undefined, ∞	Undefined, ∞
Ratio Classification	Very Unbalanced	Not Applicable	Not Applicable

Based on the ratio calculated for Clause 51, the minimum ratio obtained for Employer is 0.00. Thus, the distribution of rights and obligations for Employer is classify under “Very Unbalanced”. This clause is not applicable in the study of the distribution of rights and

obligations for Contractor and S.O. since they have no rights and no obligations under this clause.

4.54 Option Module A: Bills of Quantities

4.54.1 Clause Description

Option Module A defines the bills of quantities and the method of measurement for the bills of quantities.

4.54.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.163.

Table 4.163: Clarity for Option Module A

Total number of sentences: 9

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	7	0.78
Sentences with cross-reference	2	0.22
Sentences with passive voices	7	0.78
Sentences with negative style	2	0.22
Sentences with wordiness, cliché jargon	3	0.33
Average ratio		0.47 (Clear)

Option Module A has high ratio on sentences with more than 25 words and sentences with passive voices. Since the clause regarding the bills of quantity, the actor is unimportant in this case, this passive voice is to put the focus on bills of quantity. Despite the high percentage of the two parameters, the ratio for other parameters are relatively low. Thus, with an average ratio of 0.47, this clause is categorised as “Clear”.

4.54.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.164.

Table 4.164: Completeness for Option Module A

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Not Applicable
Rights of parties	Not Applicable
Obligations of parties	Not Applicable
Contingency adaptability	
Guidelines/ Procedures	Not Applicable
Period/ Cost/ Quantity	Not Applicable
Alternative solutions	Not Applicable
Contractual obligatoriness	
Applicable law	Complete
Penalization against the breaching party	Not Applicable
Protection for the aggrieved party	Complete

Option Module A is complete for term specificity and contractual obligatoriness. This clause does not have provision regarding to specific period/ cost/ quantity, rights and obligations of party, contingencies adaptability, and penalization against breaching party.

4.54.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis as in Table 4.165 will be done based on the employer, contractor, and S.O. in terms of rights and obligations. Based on the ratio calculated for Option Module A, the minimum ratio obtained for S.O. is 0 which the distribution of rights and obligations is classify under “Very Unbalanced”. This clause is not applicable in the study of the distribution of rights and obligations for Employer and Contractor since they have no rights and no obligations under this clause.

Table 4.165: Distribution of rights and obligations for Option Module A

	Employer	Contractor	S.O.
Rights, R	0	0	0
Obligations, O	0	0	1
R/O	Undefined, ∞	Undefined, ∞	0.00
O/R	Undefined, ∞	Undefined, ∞	Undefined, ∞
Min (R/O, O/R)	Undefined, ∞	Undefined, ∞	0.00
Ratio Classification	Not Applicable	Not Applicable	Very Unbalanced

4.55 Option Module B: Unfixed Equipment Materials or Goods Stored Off Site

4.55.1 Clause Description

Option Module B defines certification, payment and their precedent conditions.

4.55.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.166.

Table 4.166: Clarity for Option Module B

Total number of sentences: 12

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	7	0.58
Sentences with cross-reference	5	0.42
Sentences with passive voices	0	0.00
Sentences with negative style	4	0.33
Sentences with wordiness, cliché jargon	0	0.00
Average ratio		0.27 (Quite Clear)

Option Module B has higher ratio on sentences with more than 25 words, while the ratio for other parameters are low. Thus, with an average ratio of 0.27, this clause is categorised as “Quite Clear”.

4.55.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.167. Option Module B is complete for term specificity, contingency adaptability, and contractual obligatoriness. This clause does not have provision regarding to specific period/ cost/ quantity, alternative solutions and applicable law.

Table 4.167: Completeness for Option Module B

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Not Applicable
Rights of parties	Complete
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Not Applicable
Alternative solutions	Not Applicable
Contractual obligatoriness	
Applicable law	Not Applicable
Penalization against the breaching party	Complete
Protection for the aggrieved party	Complete

4.55.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis as in Table 4.168 will be done based on the employer, contractor, and S.O. in terms of rights and obligations. Based on the ratio calculated for Option Module B, the minimum ratio obtained for both Employer and Contractor are 0.00. Thus, the distribution of rights and obligations for both Employer and Contractor are classify under “Very Unbalanced”. This clause is not applicable in the study of the distribution of rights and obligations for S.O. since he has no rights and no obligations under this clause.

Table 4.168: Distribution of rights and obligations for Option Module B

	Employer	Contractor	S.O.
Rights, R	1	0	0
Obligations, O	0	1	0
R/O	Undefined, ∞	0.00	Undefined, ∞
O/R	0.00	Undefined, ∞	Undefined, ∞
Min (R/O, O/R)	0.00	0.00	Undefined, ∞
Ratio Classification	Very Unbalanced	Very Unbalanced	Not Applicable

4.56 Option Module C: Nominated Sub-Contractors and/or Nominated Suppliers

4.56.1 Clause Description

Option Module C consists 5 sub-clauses that are nominated sub-contractor and/or nominated suppliers, nomination, payment to nominated sub-contractor or nominated supplier, contractor's responsibilities and sub-contractor's design.

4.56.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.169.

Table 4.169: Clarity for Option Module C

Total number of sentences: 55

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	39	0.71
Sentences with cross-reference	21	0.38
Sentences with passive voices	7	0.13
Sentences with negative style	40	0.73
Sentences with wordiness, cliché jargon	2	0.04
Average ratio		0.40 (Quite Clear)

Option Module C has high ratio on sentences with negative style, followed by sentences with more than 25 words. However, the ratio for other parameters are relatively low. Thus, with an average ratio of 0.40, this clause is categorised as “Quite Clear”.

4.56.3 Clause Analysis – Completeness

Table 4.170: Completeness for Option Module C

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Rights of parties	Complete
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Not Applicable
Alternative solutions	Complete
Contractual obligatoriness	
Applicable law	Not Applicable
Penalization against the breaching party	Complete
Protection for the aggrieved party	Complete

Option Module C is complete for term specificity, contingency adaptability, and contractual obligatoriness. This clause does not have provision regarding to specific period/ cost/ quantity and applicable law.

4.56.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis will be done based on the employer, contractor, and S.O. in terms of rights and obligations.

Table 4.171: Distribution of rights and obligations for Option Module C

	Employer	Contractor	S.O.
Rights, R	2	2	4
Obligations, O	1	10	8
R/O	2.00	0.20	0.50
O/R	0.50	5.00	2.00
Min (R/O, O/R)	0.50	0.20	0.50
Ratio Classification	Balanced	Unbalanced	Balanced

Based on the ratio calculated for Option Module C, the minimum ratio obtained for both Employer and S.O. are 0.50, while for Contractor is 0.20. Thus, the distribution of rights and obligations for Employer and S.O. are classify under “Balanced”, while Contractor have an “Unbalanced” ratio of rights and obligations.

4.57 Option Module D: Works Designed by the Contractor

4.57.1 Clause Description

Option Module D consists 4 sub-clauses that are contractor’s design responsibility, submission of documents prior to commencement, submission of documents after completion and amendment and modification of accepted design.

4.57.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.172. Option Module D has higher ratio on sentences with more than 25 words, while the ratio for other parameters are relatively low. Thus, with an average ratio of 0.32, this clause is categorised as “Quite Clear”.

Table 4.172: Clarity for Option Module D

Total number of sentences: 26

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	16	0.62
Sentences with cross-reference	8	0.31
Sentences with passive voices	6	0.23
Sentences with negative style	9	0.35
Sentences with wordiness, cliché jargon	3	0.12
Average ratio		0.32 (Quite Clear)

4.57.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.173.

Table 4.173: Completeness for Option Module D

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Rights of parties	Complete
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Alternative solutions	Not Applicable
Contractual obligatoriness	
Applicable law	Not Applicable
Penalization against the breaching party	Complete
Protection for the aggrieved party	Complete

Option Module D is complete for term specificity, contingency adaptability, and contractual obligatoriness. This clause does not have provision regarding to alternative solutions and applicable law.

4.57.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis will be done based on the employer, contractor, and S.O. in terms of rights and obligations.

Table 4.174: Distribution of rights and obligations for Option Module D

	Employer	Contractor	S.O.
Rights, R	0	1	3
Obligations, O	1	9	2
R/O	0.00	0.11	1.50
O/R	Undefined, ∞	9.00	0.67
Min (R/O, O/R)	0.00	0.11	0.67
Ratio Classification	Very Unbalanced	Very Unbalanced	Good Balanced

Based on the ratio calculated for Option Module D, the minimum ratio obtained for Employer and Contractor is 0 and 0.11 respectively, while for S.O. is 0.67. Thus, the distribution of rights and obligations for Employer and the Contractor are classified under “Very Unbalanced”, while S.O. have a “Good Balanced” ratio of rights and obligations.

4.58 Option Module E: Payment Bond

4.58.1 Clause Description

Option Module E consists 4 sub-clauses that are submission of payment bond, validity of payment bond, use of payment bond and release of payment bond.

4.58.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.175.

Table 4.175: Clarity for Option Module E

Total number of sentences: 7

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	6	0.86
Sentences with cross-reference	5	0.71
Sentences with passive voices	4	0.57
Sentences with negative style	1	0.14
Sentences with wordiness, cliché jargon	2	0.29
Average ratio		0.51 (Clear)

Option Module E has highest ratio on sentences with more than 25 words, followed by sentences with cross-reference, and sentences with passive voices. With an average ratio of 0.51, this clause is categorised as “Clear”.

4.58.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.176.

Table 4.176: Completeness for Option Module E

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Rights of parties	Complete
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Not Applicable
Alternative solutions	Not Applicable
Contractual obligatoriness	
Applicable law	Not Applicable
Penalization against the breaching party	Complete
Protection for the aggrieved party	Complete

Option Module E is complete for term specificity, contingency adaptability, and contractual obligatoriness. This clause does not have provision regarding to specific period/ cost/ quantity, alternative solutions and applicable law.

4.58.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis will be done based on the employer, contractor, and S.O. in terms of rights and obligations.

Table 4.177: Distribution of rights and obligations for Option Module E

	Employer	Contractor	S.O.
Rights, R	0	2	0
Obligations, O	3	1	0
R/O	0.00	2.00	Undefined, ∞
O/R	Undefined, ∞	0.50	Undefined, ∞
Min (R/O, O/R)	0.00	0.50	Undefined, ∞
Ratio Classification	Very Unbalanced	Balanced	Not Applicable

Based on the ratio calculated for Option Module E, the minimum ratio obtained for both Employer and Contractor is 0.00 and 0.50 respectively. Thus, the distribution of rights and obligations for Employer and Contractor is classify under “Very Unbalanced” and “Balanced” respectively. This clause is not applicable in the study of the distribution of rights and obligations for S.O. since he has no rights and no obligations under this clause.

4.59 Option Module F: Performance Security Deposit

4.59.1 Clause Description

Option Module F consists 3 sub-clauses which are submission of performance security deposit, validity of the performance security deposit and utilisation of performance security deposit by employer.

4.59.2 Clause Analysis – Clarity

Based on the designed methodology, the number of sentences that meets the parameter is determined and calculation of the Average Ratio are made as shown in Table 4.178.

Table 4.178: Clarity for Option Module F

Total number of sentences: 14

Parameter	No. of sentences	Ratio
Sentences with more than 25 words	11	0.79
Sentences with cross-reference	4	0.29
Sentences with passive voices	2	0.14
Sentences with negative style	5	0.36
Sentences with wordiness, cliché jargon	0	0.00
Average ratio		0.31 (Quite Clear)

Option Module F has very high ratio on sentences with more than 25 words. However, the ratio for other parameters are relatively low. Thus, with an average ratio of 0.31, this clause is categorised as “Quite Clear”.

4.59.3 Clause Analysis – Completeness

The results obtained from analysis for completeness is presented in Table 4.179.

Table 4.179: Completeness for Option Module F

Term Specificity	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Rights of parties	Complete
Obligations of parties	Complete
Contingency adaptability	
Guidelines/ Procedures	Complete
Period/ Cost/ Quantity	Complete
Alternative solutions	Complete

Table 4.179 continued

Contractual obligatoriness	
Applicable law	Complete
Penalization against the breaching party	Complete
Protection for the aggrieved party	Complete

Option Module F is complete for every parameters of completeness, explicitly term specificity, contingencies adaptability, and contractual obligatoriness.

4.59.4 Clause Analysis – Distribution of Rights and Obligations

The following analysis will be done based on the employer, contractor, and S.O. in terms of rights and obligations.

Table 4.180: Distribution of rights and obligations for Option Module F

	Employer	Contractor	S.O.
Rights, R	3	0	0
Obligations, O	0	2	0
R/O	Undefined, ∞	0.00	Undefined, ∞
O/R	0.00	Undefined, ∞	Undefined, ∞
Min (R/O, O/R)	0.00	0.00	Undefined, ∞
Ratio Classification	Very Unbalanced	Very Unbalanced	Not Applicable

Based on the ratio calculated for Option Module F, the minimum ratio obtained for both Employer and Contractor are 0.00. Thus, the distribution of rights and obligations for Employer and Contractor are classify under “Very Unbalanced”. This clause is not applicable in the study of the distribution of rights and obligations for S.O. since he has no rights and no obligations under this clause.

4.60 Summary of Results

Following sections present the overall results and finding of CIDB Standard Form of Contract 2000 from established quantitative evaluation framework.

4.60.1 Clarity

Table 4.181 tabulates the number of sentences for every parameter under each clause. The number of sentences for every parameter are summed up to calculate the overall average ratio.

Table 4.181: Overall result for clarity

	Total number of sentences	Sentences with more than 25 words	Sentences with cross-references	Sentences with passive voices	Sentences with negative style	Sentences with wordiness, cliché & jargon
Clause 1	94	4	21	12	14	0
Clause 2	17	10	3	5	6	0
Clause 3	13	11	4	0	5	0
Clause 4	34	12	8	4	10	1
Clause 5	14	9	1	3	5	0
Clause 6	6	2	2	1	2	1
Clause 7	10	8	0	1	4	2
Clause 8	4	2	0	0	3	0
Clause 9	3	3	0	0	0	0
Clause 10	9	8	2	0	3	0
Clause 11	3	2	1	1	0	1
Clause 12	10	4	3	0	1	0
Clause 13	13	10	2	4	4	0
Clause 14	14	7	0	2	2	0
Clause 15	32	17	4	3	10	0
Clause 16	2	2	0	1	0	0
Clause 17	20	13	10	5	5	0

Table 4.181 continued

	Total number of sentences	Sentences with more than 25 words	Sentences with cross- references	Sentences with passive voices	Sentences with negative style	Sentences with wordiness, cliché jargon
Clause 18	6	4	0	1	2	0
Clause 19	20	9	11	0	5	0
Clause 20	13	7	2	3	4	1
Clause 21	8	6	2	2	2	0
Clause 22	10	4	8	1	3	0
Clause 23	15	14	11	5	2	0
Clause 24	42	21	22	1	15	0
Clause 25	5	5	3	0	2	1
Clause 26	14	8	5	5	10	0
Clause 27	21	14	5	4	7	1
Clause 28	7	5	3	3	3	2
Clause 29	18	15	4	6	11	2
Clause 30	9	5	0	3	5	1
Clause 31	12	4	7	1	6	0
Clause 32	22	18	11	2	7	2
Clause 33	14	12	6	2	5	2
Clause 34	5	5	2	1	2	0
Clause 35	10	9	7	3	1	1
Clause 36	8	6	4	2	0	0
Clause 37	14	11	10	2	2	0
Clause 38	50	46	34	15	11	0
Clause 39	3	2	0	2	0	1
Clause 40	13	9	2	3	7	1
Clause 41	6	6	3	1	3	0
Clause 42	80	50	36	10	27	4
Clause 43	10	8	6	1	2	0
Clause 44	54	17	17	1	16	0
Clause 45	34	13	15	1	16	0

Table 4.181 continued

	Total number of sentences	Sentences with more than 25 words	Sentences with cross- references	Sentences with passive voices	Sentences with negative style	Sentences with wordiness, clich é jargon
Clause 46	2	1	1	1	1	0
Clause 47	33	20	13	8	15	2
Clause 48	2	1	0	2	0	0
Clause 49	1	1	0	0	0	0
Clause 50	5	1	0	2	0	0
Clause 51	5	4	0	1	3	0
Option A	9	7	2	7	2	3
Option B	12	7	5	0	4	0
Option C	55	39	21	7	40	2
Option D	26	16	8	6	9	3
Option E	7	6	5	4	1	2
Option F	14	11	4	2	5	0
Sum	992	571	356	163	330	36
Ratio		0.58	0.36	0.16	0.33	0.04

$$\text{Overall Average Ratio} = \frac{0.58 + 0.36 + 0.16 + 0.33 + 0.04}{5} = 0.36$$

From the Table 4.181, with a total of 992 sentences in this standard form, the sentences with more than 25 words occupy the highest percentage, which is more than half of the contract. As refer to article by Vincent (2014), research conducted by UK digital government department discovered that sentences longer than 25 is consider difficult to read. Writing guru Ann Wylie in his article also proved that, with an average sentence length of 14 words, readers can understand more than 90% of the content. However, for average sentence length of 43 words, their comprehension drops to less than 10%. From data obtained, CIDB 2000

has 159 sentences with more than 50 words, 46 sentences with more than 75 words, and 8 sentences with more than 100 words. Such long sentences definitely affect the clarity of contract.

Other than the length of sentences, sentences with cross-reference and sentences with negative style both occupy about 30 percent of the total number of sentences. This ratio still acceptable as these styles of language have their specific purpose in the contract. Explicitly, sentences with cross-reference is used to indicate how the two provisions interact; whether the one is an elaboration on the other, subordinated or prevailing. While negation words are used to impose the prohibition on the subject of the sentence (Adams, 2013).

Overall, sentences with more than 25 words scores the highest ratio among all parameters, which is 0.53. Followed by sentences with cross-reference and sentences with negative style, which scores 0.36 and 0.33 respectively. Sentences with passive voice have ratio of 0.16, while sentences with wordiness, cliché and jargon only have a ratio of 0.04. Thus, with an overall average ratio of 0.36, CIDB 2000 is categorised as “Quite Clear” contract.

4.60.2 Completeness

Table 4.182 tabulates the results of completeness for every parameter under each clause. Only clauses that complete in all parameters will be categorised as “Complete Clause.”

Table 4.182: Overall result for completeness

Clause	Completeness		
	Term Specificity	Contingencies Adaptability	Contractual Obligatoriness
Clause 1	Not Applicable	Not Applicable	Not Applicable
Clause 2	Complete	Incomplete	Complete
Clause 3	Complete	Incomplete	Complete

Table 4.182 continued

Clause	Completeness		
	Term Specificity	Contingencies Adaptability	Contractual Obligatoriness
Clause 4	Complete	Complete	Complete
Clause 5	Complete	Incomplete	Complete
Clause 6	Complete	Incomplete	Incomplete
Clause 7	Complete	Incomplete	Incomplete
Clause 8	Complete	Complete	Complete
Clause 9	Complete	Complete	Complete
Clause 10	Complete	Complete	Complete
Clause 11	Complete	Not Applicable	Complete
Clause 12	Complete	Complete	Complete
Clause 13	Complete	Incomplete	Incomplete
Clause 14	Complete	Incomplete	Complete
Clause 15	Complete	Complete	Complete
Clause 16	Incomplete	Incomplete	Incomplete
Clause 17	Complete	Complete	Complete
Clause 18	Incomplete	Incomplete	Complete
Clause 19	Complete	Complete	Complete
Clause 20	Complete	Complete	Complete
Clause 21	Complete	Complete	Complete
Clause 22	Complete	Complete	Not Applicable
Clause 23	Complete	Incomplete	Complete
Clause 24	Incomplete	Incomplete	Complete
Clause 25	Complete	Complete	Complete
Clause 26	Complete	Complete	Complete
Clause 27	Incomplete	Incomplete	Complete
Clause 28	Incomplete	Incomplete	Complete
Clause 29	Complete	Complete	Complete
Clause 30	Complete	Complete	Not Applicable
Clause 31	Complete	Complete	Complete
Clause 32	Incomplete	Incomplete	Complete

Table 4.182 continued

Clause	Completeness		
	Term Specificity	Contingencies Adaptability	Contractual Obligatoriness
Clause 33	Complete	Complete	Incomplete
Clause 34	Complete	Complete	Complete
Clause 35	Complete	Complete	Complete
Clause 36	Complete	Complete	Complete
Clause 37	Complete	Complete	Complete
Clause 38	Complete	Complete	Complete
Clause 39	Complete	Not Applicable	Complete
Clause 40	Complete	Incomplete	Complete
Clause 41	Complete	Complete	Not Applicable
Clause 42	Complete	Complete	Complete
Clause 43	Complete	Complete	Not Applicable
Clause 44	Complete	Incomplete	Complete
Clause 45	Complete	Complete	Complete
Clause 46	Complete	Not Applicable	Not Applicable
Clause 47	Complete	Complete	Complete
Clause 48	Complete	Complete	Not Applicable
Clause 49	Complete	Not Applicable	Complete
Clause 50	Complete	Not Applicable	Complete
Clause 51	Complete	Not Applicable	Complete
Option Module A	Complete	Not Applicable	Complete
Option Module B	Complete	Complete	Complete
Option Module C	Complete	Complete	Complete
Option Module D	Complete	Complete	Complete
Option Module E	Complete	Complete	Complete
Option Module F	Complete	Complete	Complete

From the Table 4.182, there are a total of 38 clauses is rated as Complete Clause, while the rest of 19 clauses is incomplete in either term specificity, contingencies adaptability,

contractual obligatoriness. In some of the issue, it is not needed to consider the procedures or guideline for contingencies, hence, the parameter is not applicable for that clause. The same case applied when analysing the contractual obligatoriness of a clause. It is noted that it is impossible to get a Not Applicable rate for term specificity except for Clause 1 declaring the definition of specific terms.

There is only one clause that is incomplete for all of the parameters, which is Clause 16. For the part of term specificity, this clause did not declare the preconditions for the employment of foreign labours. Besides, provisions regarding to discharge of labour (contingencies) is not provided. In addition, there is no specific labour law mentioned, no penalization or protection to parties if contractor fail to comply with his responsibilities with employed labour. This contributes to an incomplete for contractual obligatoriness.

Among all the parameters, there is only few clause mentioning the alternative solutions. For example, Clause 8 regarding to serving of notice, given the alternative solution for delivery method, either by hand delivery or courier, or by post. Other than that, is the payment method for amount of any loss, expense, costs or damages suffered or incurred by the Employer due to Contractor. This amount can be recoverable from the Contractor or Employer can choose to deduct the amount from any payment due or to become due to the Contractor.

Regarding to the matters of dispute resolution, researchers comments that CIDB 2000 includes the most option to solve the dispute. However, the option is not alternative, Clause 47 will provide a guideline of steps to be taken to settle disputes, and option is given after option if previous option fails to resolve the problems, until final stage, which is arbitration. This gives a proper direction to each party so that no party will unilaterally go for arbitration without the other party's consent (Quay, 2008). Besides, CIDB 2000 give more protection

to contracting parties as compared to clauses with penalization against breaching parties. Overall, most of the clauses in CIDB 2000 is complete, only 3 clauses require some modification.

4.60.3 Distribution of Rights and Obligation

The total number of rights and obligations of each contracting party are summed up in this section. Table 4.183 tabulates the number of rights and obligations for the contracting parties involved under each clause.

Table 4.183: Overall result for distribution of rights and obligations

Clauses	Contracting Parties					
	Employer		Contractor		S. O.	
	R	O	R	O	R	O
Clause 1	0	0	0	0	0	0
Clause 2	1	0	1	1	5	4
Clause 3	3	0	1	5	3	3
Clause 4	0	3	1	9	3	5
Clause 5	0	0	1	3	1	2
Clause 6	0	4	0	0	0	0
Clause 7	0	0	0	7	0	1
Clause 8	1	2	1	2	1	2
Clause 9	0	1	0	2	0	0
Clause 10	0	2	0	5	0	3
Clause 11	0	0	0	2	0	0
Clause 12	0	1	1	5	1	1
Clause 13	0	0	0	12	4	0
Clause 14	0	0	0	7	0	1
Clause 15	2	2	0	14	8	2
Clause 16	0	0	0	3	1	0
Clause 17	1	1	4	8	0	1
Clause 18	1	0	0	3	0	1

Table 4.183 continued

Clauses	Contracting Parties					
	Employer		Contractor		S. O.	
	R	O	R	O	R	O
Clause 19	0	0	3	2	2	1
Clause 20	0	0	1	2	0	4
Clause 21	1	1	1	8	1	1
Clause 22	0	0	0	0	0	0
Clause 23	2	2	1	2	0	2
Clause 24	0	0	1	2	5	7
Clause 25	0	0	0	2	0	1
Clause 26	4	2	0	0	0	4
Clause 27	3	0	0	5	3	4
Clause 28	0	0	1	3	1	1
Clause 29	0	0	1	6	1	5
Clause 30	0	0	0	5	0	4
Clause 31	0	0	1	0	0	0
Clause 32	0	0	2	9	4	0
Clause 33	2	0	0	1	0	0
Clause 34	0	0	0	5	0	1
Clause 35	3	1	1	3	1	1
Clause 36	1	0	0	3	0	0
Clause 37	1	0	0	10	0	1
Clause 38	2	8	5	13	0	1
Clause 39	0	0	0	2	0	0
Clause 40	1	1	2	2	0	0
Clause 41	0	0	2	0	2	1
Clause 42	4	7	4	9	9	10
Clause 43	0	0	0	0	0	0
Clause 44	8	1	0	4	2	2
Clause 45	0	0	5	3	0	1
Clause 46	1	0	0	0	0	0
Clause 47	4	4	4	5	0	2

Table 4.183 continued

Clauses	Contracting Parties					
	Employer		Contractor		S. O.	
	R	O	R	O	R	O
Clause 48	1	0	0	0	0	0
Clause 49	0	1	0	1	0	1
Clause 50	0	0	0	3	0	0
Clause 51	0	1	0	0	0	0
Option Module A	0	0	0	0	0	1
Option Module B	1	0	0	1	0	0
Option Module C	2	1	2	10	4	8
Option Module D	0	1	1	9	3	2
Option Module E	0	3	2	1	0	0
Option Module F	3	0	0	2	0	0
TOTAL	53	50	50	221	65	92

Table 4.184 shows the calculation of Minimum ratio and its classification for results obtained from Table 4.183.

Table 4.184: Overall distribution of rights and obligations

	Employer	Contractor	S. O.
Rights, R	52	50	65
Obligations, O	50	221	92
R/O	1.04	0.23	0.71
O/R	0.96	4.42	1.42
Min (R/O, O/R)	0.96	0.23	0.71
Ratio Classification	Very Good Balanced	Unbalanced	Good Balanced

From the Table 4.184, the Employer has a total of 53 rights and 50 obligations, which results a minimum ratio of 0.94. This shows that the difference between number of rights and obligations are small, hence a high ratio can be obtained when the smaller number divide

by the larger number. This creates a very good balance between the rights and obligations. In CIDB 2000, the result shows that the distribution of rights for employer is only slightly higher than the distribution of obligations. This prove that CIDB forms did emphasis on Employer's obligation to cope with the problem arise from a construction project such as the issue of late or non-payment by the employer.

On the other hand, the Contractor obtained a minimum ratio of 0.24 with a total number of rights and obligations of 50 and 221 respectively. This results clearly shows that the distribution of rights and obligation for contractor is unbalance, where the number of rights are much lower compare to the number of obligations. This results suit the definition as a contractor which mentioned in section 2.3.1 whereby the contractor is a person or legal entity who under the contract is actually entrusted to carry out the construction works in engineering industry. Thus, it is normal to have more obligations than rights. Many industry practitioners comment that CIDB 2000 is perceived as too contractor-friendly, offering less protection to the Client than the more traditional PWD 75 (Ting, Sia, & Whyte, 2010). However, the data that analyse in quantitative method overthrow the perspective of too contractor-friendly. Although CIDB Forms of Contract 2000 encountered more rights for Contractor as compared to other standard forms, but Employer's rights is still higher when compared to Contractor's rights.

Besides that, the S.O. has a balanced overall distribution ratio of 0.71. The distribution of rights for S.O. in this contract is 65 while there are 92 obligations distributed for S.O which results in a "Good Balanced" ratio. Generally, Superintending Officer works as an agent of Employer, thus, he is obliged to administer the contract for the Employer. At the same time, he also act as a certifier that contributes to the number of rights in a contract (Mohd Danuri, Che Munaaim, Abdul Rahman, Abd Karim, & Liew, 2007).

Overall, the Employer has a very good balanced distribution ratio, which is about 0.94, while in contrast, the contractor has an unbalanced distribution ratio of 0.24. Besides that, S.O. has a good balanced ratio distribution of 0.71.

4.61 Summary of Chapter

The framework was successfully applied on CIDB Standard Form of Contract 2000 to test its effectiveness. The obtained results from analysis have been discussed according to clauses, while the effectiveness of the framework will be further discussed in the following chapter.

CHAPTER 5

DISCUSSION

5.1 General

Previous chapter developed an evaluation framework with pre-determined attributes and aligned parameters, alongside with systematic and objective form measurement method. Besides, a framework validation is conducted on CIDB 2000 to verify the effectiveness of the framework. All clauses in the form have been studied and evaluated in detail through utilising the designed and developed method of analysis. This chapter will then discuss on the workflow of the framework and its significance, subsequently discussed the ability of the analysis method to recognise the pros and cons of the standard form and the problems encountered during the interpretation and analysis of the clauses.

5.2 Standard Form Evaluation Framework

The evaluation framework developed in this research work consists sets of specific form measurement method to analyse the standard form in Malaysia by using a quantitative content measurement tool. This research work first developed the theoretical part of the framework by deriving the parameters from literature review. Each attribute (clarity, completeness, and distribution of rights and obligation) with respective aligned parameters, provide a basis for evaluation. Subsequently, the mathematical part of framework involves the design of systematic and objective measurement procedures to analyse the contents in standard form. Data of the framework is collected from standard form by calculating the

quantity of the contents that is in line with the parameters and sub-parameters as designed. Collected data will then be grouped by clause for further analysis and evaluation.

This framework analyses the clarity of a standard form by calculating the sentences based on five parameters as designed in Table 3.1, including the following:

- Sentences with more than 25 words
- Sentences with cross-references
- Sentences with passive voice
- Sentences with negation words
- Sentences with wordiness, cliché jargon, ambiguous word

Upon the completion of interpretation, the number of sentences that is in line with the parameter is summed up by clause at first, subsequently divided by the total number of sentences in a clause to obtain a ratio for the parameter. After that, average ratio for five parameters in a clause that range from 0 to 1 is obtained and used for the evaluation with a five-point Likert scale.

On the other hand, this framework analyses the completeness of a standard form in three dimensions as constructed in Table 3.2, including the following,

- Term Specificity: Contractual terms such as procedure/guidelines, time/cost/quantity, rights and obligation of a party are clearly specified.
- Contingencies Adaptability: Procedure/guidelines, time/cost/quantity, and alternative solutions are provided to account for possible contingencies.
- Contractual Obligatoriness: Each party are legally bound to the contract with applicable law, penalization is given to breaching party, and protection is given to aggrieved party.

Every sentence in the clause will sort into the related sub-parameters accordingly. The analysis of completeness is straightforward and did not involve any number scores or calculation, because it is not logical to measure the level of completeness. Hence, a clause that is incomplete in any sub-parameters will contribute to incomplete parameter for the particular clause.

In addition, this framework analyses the distribution of rights and obligation of a standard form by calculating the number of rights and number of obligation of each contracting party in a clause. The interpretation of rights and obligation is based on the keywords as determined in Table 3.3, including the following:

- Keywords denote rights: May; is entitled to; has discretion to; is permitted to; is authorised to; is given liberty to; is given permission to; etc.
- Keywords denote obligation: Shall; must; will; has duty to; is obliged to; is bound to; agrees to; undertakes to; promises to; covenants to; is responsible for; etc.

After sorting out the rights and obligation for each contracting party, the number of rights and the number of obligation in a clause is summed up to compute its minimum ratio. Minimum ratio of a contracting party that range from 0 to 1 is computed by obtaining the lowest value from either the ratio of rights to obligation or the ratio of obligation to rights. Subsequently, the minimum ratio obtained is used for the evaluation with a five-point Likert scale.

5.3 Significance of Findings

The research work conducted here has in effect produced a theoretical and mathematical evaluation framework towards the evaluation of standard form in terms of

clarity, completeness, and distribution of rights and obligation. This framework provides a systematic and objective review for Malaysian construction contracting.

The developed standard form evaluation framework for standard form in Malaysia is argued to have significant benefit to local construction industry practitioners; namely, in assisting contracting parties aware of their rights and obligation, and aware of the lacking conditions in standard form. Generally, the choice of contract to be used for a work project will be determined by the employer and the other party in the contract will normally accept without any condition due to the need to secure the employment for the work project. Thus, this framework created an evaluating system for contracting parties, especially the contractor to understand the strengths and weaknesses of the chosen standard form, to bargain for their benefits in the contract.

Other than that, the newly developed framework with a numerical result helps the contract drafter and contract administrator to gain a better understanding on pros and cons of local standard form. Upon selecting a standard form for a construction projects, the framework can assist in making coordinated adjustment by discovering the lacking parts in the selected standard form.

Furthermore, the developed framework is argued to ensure the contracting parties take full objective account for future contract administration during construction that might result from potentially disruptive issues prone to arise from ambiguous, incomplete conditions and clauses. Typically, the contracting parties depend on their experience to acknowledge the problems might be encountered with the usage of the standard form. If there are no problems arisen previously, they will have no awareness on potentially disruptive issues and it is too late to realise when the problem is already occurred. Specific attributes with detailed parameters and measurement method in the framework allows the contracting parties to

identify the specific parameters or sub-parameters that contribute the negative scores. Hence, precise solution to known problems can be made.

Besides, the framework developed here provides a systematic and objective method for form analysis that is repeatable for every clause, to analyse and evaluate the form in-depth. The analysed results by using sets of parameters with clarification and ratio classification that designed for this study helps to provide a guideline on improving the clarity and completeness of this standard form, and helps in balancing the distribution of rights and obligations in each party. Hence, this framework can be used as a standardized method for form review for future form revisions and/or redrafting.

Other than that, this framework with the three attributes of evaluation and their respective parameters can be used locally and for international counterparts for form review to address the existing gap in current research regarding the need for standard forms and general conditions study and research into an objective, repeatable, clause assessment technique.

Moreover, the developed framework is argued to be user-friendly for contracting parties. Each and every parameters and sub-parameters is clarified to ease the interpretation work while avoiding any doubt during form study. Also, it involves only simple mathematics analysis calculation with a clear scores rating.

5.4 Framework Validation on CIDB 2000

Reviews from framework validation proved that the evaluation framework established by the research work has successfully evaluated the contents of standard form as intended by providing number scores with its rating. Generally, the results shown are very consistent with the reviews and other existing commentaries on the CIDB 2000.

5.4.1 Analysis on Clarity

Based on the intensive form analysis of CIDB 2000, there are about twelve percent (12%) of clauses grouped under Very Clear Category, while sixty-three percent (63%) falls under Quite Clear Category, and twenty-five percent (25%) of clauses are categorised under Clear Category. None of the clauses fall under category of Unclear and Very Unclear. Table 5.1 presents the number of clauses under different category.

Table 5.1: Results of clarity based on ratio classification

Ratio Classification	Number of Clauses
Very Clear	7
Quite Clear	36
Clear	14
Unclear	0
Very Unclear	0

From Table 5.1, all clause in CIDB 2000 fall under clear section. The analysis shows that CIDB 2000 is a standard form with good clarity. As commented by Ting (2013), CIDB 2000 is written in a simple, clear and concise manner, enhancing the understanding of the clauses. Most sentences (with exception of some clauses) are short and readable. Other than that, significant amount of bullets and point forms in the standard form enhanced the clarity of the clauses. These comments are coinciding with the results obtained from evaluation framework. Even better, the framework run the analysis through the contents and give a number scores that support the results of clarity of the standard form.

During the interpretation of clauses, it is easy to identify the sentences that is in line with designed parameters, except for sentences with wordiness, cliché jargon, ambiguous word. In order to avoid any misinterpretation, Microsoft Word's proofing tools is used to verify the words identified by researcher. It is noted that for the paragraph that is presented

in point form, each point will constitute a sentence. This analysis is considered more comprehensive as compare to Rameezdeen and Rodrigo's (2013) study, other than length of sentences, structure and style of sentences were included as parameters for measurement.

At the stage of calculating average ratio for a clause, all each parameter is assumed to have equal weightage. In another words, all parameters will equally affect the clarity. Besides, using ratio to fix the results range from 0 to 1 will highly affect the clauses with few sentence. For example, a clause with a total of one sentence that has more than 25 words, passive voice, and negation words will end up an average ratio of 0.6 (Clear Clause).

It is noted that the five parameters for clarity analysis is modified from the eleven clarity problems listed out by Chong and Rosli (2010). Problems that cannot be measured directly such as complexity of noun phrases, poor words formation, etc. is excluded from the parameters. Hence, it is suggested to adopt some grammar check tools in the analysis, so that more parameters can be included. Besides, more advance method of calculation is recommended to further highlights the relationship between data

5.4.2 Analysis on Completeness

As for analysis of completeness, there are about eighty-nine percent (89%) of clauses that is complete in term specificity, while the contingencies adaptability and contractual obligatoriness obtained sixty-five percent (65%) and ninety percent (90%) of complete clause. It is noted that the Not Applicable clause is excluded from percentage calculation. Results as presented in Table 5.2 concludes that the complete clauses occupy the highest percentage in all dimension, while incompleteness of CIDB 2000 is mostly due to the contingencies adaptability in certain issues. This result also shows that CIDB 2000 is a quite complete form, which is coincide with public's point of view.

Table 5.2: Results of completeness based on ratio classification

Level of Completeness	Number of Clauses		
	Term Specificity	Contingencies Adaptability	Contractual Obligatoriness
Complete	50	32	45
Incomplete	6	17	5
Not Applicable	1	8	7

During clause interpretation, it is confusing when determining the sentences that signify contingencies in a clause. In order to encounter this issue, sentences that consists of conditional clause as explained in Section 2.8.3 is categorised under contingencies adaptability.

During the analysis of data, the lacking in clause can be identified whether the clause provide specific information for the procedure, whether the clause covers contingencies, and whether the clause provides provision to protect or to penalise a party when necessary. If any of the needed information is not provided in the particular clause, it will constitute to incomplete sub-parameter and results as an incomplete clause. However, the framework is unable to detect the problems if the standard form remains total silent in certain issues. Explicitly, since this framework is conducted in clause by clause manner, therefore, the lacking in standard form cannot be identified if there is no related clause for particular issues.

Furthermore, there are cases where the related procedure or guideline is cross-reference with contents in another clause, but since this analysis is conducted in clause by clause manner, hence, the cross-reference will not affect the results. However, the analysis method unable to detect the situation where cross-reference is not provided when necessary. Hence, the analysis still requires the knowledge or experience of researcher to overcome the weakness of the framework, to identify the lacking in clause.

Discussion above shows that the analysis for completeness requires improvement. Experienced expert in construction industry may be involved in the development of parameters in order to analyse the clause more comprehensively.

5.4.3 Analysis on Distribution of Rights and Obligation

While for analysis of distribution of rights and obligation, Table 5.3 presents the number of clauses obtained by every contracting party under different category.

Table 5.3: Results of distribution of rights and obligation based on ratio classification

Ratio Classification	Number of Clauses		
	Employer	Contractor	S.O.
Very Unbalanced	21	31	20
Unbalanced	2	8	2
Balanced	4	7	6
Good Balanced	0	1	2
Very Good Balanced	6	4	8
Not Applicable	24	9	18

Table 5.3 shows that the number of Very Unbalanced Clause and Not Applicable Clause for every contracting party are high as compared to other category. This situation explained that why standard form must be read as a whole, because some of the clause only defines the general obligation of certain party and this will contribute a “Very Unbalanced” clause since there is no rights given to that party under this clause. Also, the clause by clause analysis shows that it might results negative rated clause if the information is separately provided in different clause. Hence, the results obtained are not an exact presentation but provide an estimation of the quality of the standard form.

Other than that, the minimum ratio method that used to analyse the data obtained for number of rights and number of obligation seems to be not so effective when it meets number

“0”. When “0” divided by any number, it results a “0”. However, when any number divided by “0”, it results as undefined. This shows that the calculation of minimum ratio that involves “0” will directly results as “0” (Very Unbalanced Clause), regardless what is the amount of another number. It cannot really show the relationship of number of rights and number of obligation when it comes a “0”. Hence, the use of minimum ratio to assess the balance of distribution of rights and obligations invites the need for further clarification and justification.

In addition, employer has high number of clause that is Not Applicable for the analysis, which also means that employer as a client did not involve much in completion of the project. He only involves in giving possession, payment, insurance, determination of works, and settlement of disputes, which contributes to high number of Very Unbalanced Clause. Despite the high number of Very Unbalanced Clause, employer obtain a very good balanced result in overall distribution of rights and obligations. This is probably because, some of the issues only mentioned the rights of employer while some of it only mentioned his obligations.

Besides, contractor has more number of clauses fallen under Very Unbalance Category. Majority of the clauses in this category has the number of obligations exceed the number of rights. Furthermore, contractor has the least number of Not Applicable Clause among all the contracting parties. These figure explained the work nature and involvement of contractor in most of the issues to make sure the work is done according to schedule.

On the other hand, superintending officer has more number of Good Balance clause and Very Good Balanced clause as compared to the contractor and employer. As discussed previously in Section 4.60.3, superintending officer as an agent of Employer is obliged to inspect the project and given rights to certify the work done.

During the form analysis, it can be seen that misused of “shall” during the formation of a contract will affects the interpretation of rights and obligations. Taking sub-clause 35.5

(a) as an example, *If the Contractor fails to comply with the instruction of the Superintending Officer under Clause 35.4 then the Employer shall be entitled to employ and pay other persons to carry out the same.* According to the keywords in Table 3.3, the keyword “shall” indicates the obligation of Employer, while the terms “entitled to” indicates the rights for the Employer. In this example, rights is given to the employer to encounter with the contingency/conditional event, but it is confusing to use “shall” to introduce a right if “shall” also introduces obligations in the same contract. Hence, the determination of the rights and obligation cannot be straightforward by using the keywords due to misused language in standard form.

It is noted that the method of calculation in this analysis only determine the distribution of rights and obligation of a contracting party in a clause. Hence, it is suggested to include the calculation to determine the balance of rights or the balance of obligation within contracting parties under a clause. Furthermore, the analysis is conducted in clause by clause manner, there is cases where some clause might have repeated rights or obligation in other clause. Thus, it is recommended to improve the framework to encounter this issue in future work.

5.5 Summary of Chapter

This chapter initially discussed the workflow of the framework, subsequently discussed the significance of research, followed by the effectiveness of the developed framework to analyse the clarity, completeness, and distribution of rights and obligations of a standard form using the results obtained from framework validation. Problems encountered during the interpretation and analysis stage is identified. Next chapter will then conclude the entire research with some recommendations.

CHAPTER 6

CONCLUSION AND RECOMMENDATIONS

6.1 General

This chapter concludes all the research work that has been conducted by finalising research findings, research constraints, as well as the suggestions for future studies. The chapter concludes discussion of the extent to which this work has sought to evaluate the existing standard form in Malaysia through the development of a quantitative evaluation framework.

6.2 Research Findings

Due to the complexity of a construction project, Malaysian construction industry heavily dependent on construction contract to govern the contractual relations of the contracting parties. Among the construction contract documents, standard form of contract as a general condition of contract stands an important role to set up all term and conditions that clearly define the rights and obligations of contracting parties, cover all aspect in a project, bind the contracting parties with legal statements, and lay down administrative procedures to be followed during the progress of the works. The use of standard form in a civil engineering project has long been standard procedure, in which all parties involve are well versed with the structured bond and duties that the contract implies.

In Malaysia, it appears to have several standard forms drafted by different institutional body. Even though newer edition of standard form of contract have been introduced in Malaysia in the past, to be used as replacement of older contracts that may be found as inadequate or ineffective, but, extensive literature reviews shows that all existing and revised

standard form in Malaysia were still fall short of being good. Major and common problems such as poor in clarity, incomplete in provisions dealing with time, payment and safety issues, imbalance allocation of risk, rights and obligation, poor in procedural, and lack in consistencies water down the effectiveness of a standard form.

In fact, the effectiveness of the newer standard form of contract as a “better” or “good” contract is difficult to be properly assessed due to there is no existing tool that can be used for such purpose. The revised standard form may have improved in certain aspect that has been found to be lacking, but at the same time could have introduce more issues. It is noted that most of the existing form analysis method is done based on a subjective commentary basis, by comparing few standard forms, or conducting interviews with experienced individuals who is familiar with the standard form, or collecting data through questionnaires survey. Few researches adopt the objective measurement tool to analyse the standard form, but the scope of analysis is limited. Hence, it is important to establish a framework that consists of a set of form analysis method, which is able to provide a systematic and objective review for the construction industry in Malaysia.

Among the demerits in standard form, most of the standard form in Malaysia is problematic in terms of clarity, completeness, and fairness in distribution of rights and obligation. Literature in Section 2.7 also shows that these three problems are crucial for its effectiveness in resolving problems that surfaced throughout the construction project. A standard form that is poor in clarity, incomplete, and imbalance in distribution of rights and obligation may result in unnecessary contractual problems such as dispute. Hence, the focus of develop framework is set to analyse the standard form in three attributes, which is clarity, completeness, and distribution of rights and obligation.

This project developed a framework that consists of specific form measurement method for the purpose of this research work. The method developed by this project adapted and modified the work carried out by Rameezdeen and Rodrigo (2013, 2014) whose method sought to analyse the standard form by using a quantitative content measurement tool. The quantitative approach of form analysis method first developed the theoretical part of the framework by deriving the parameters from literature review. Each attribute (clarity, completeness, and distribution of rights and obligation) with respective aligned parameters, provide a basis for evaluation. Subsequently, the mathematical part of framework involves the design of systematic and objective measurement procedures to analyse the contents in standard form. Data of the framework is collected from standard form by calculating the quantity of the contents that is in line with the parameters and sub-parameters as designed. Collected data will then be grouped by clause for further analysis and evaluation.

The level of clarity is determined by the number of long sentences, number of sentences with cross-reference, number of sentences with passive voice, number of sentences with negative style, and number of sentences with wordiness, cliché jargon and ambiguous words. The number of sentences that is in line with the parameter is summed up by clause at first, subsequently divided by the total number of sentences in a clause to obtain the ratio of the parameter. After that, average ratio for five parameters in a clause with the range from 0 to 1 is obtained and used for the evaluation for the level of clarity of a clause in standard form.

Besides, completeness is determined in three-dimension construct that includes the extent to which contractual terms are clearly specified (term specificity), possible contingencies are accounted for (contingency adaptability), and each party are legally bound to the contract (contractual obligatoriness). The analysis of completeness is straightforward

and did not involve any number scores or calculation, because it is not logical to measure the level of completeness. Hence, a clause that is incomplete in any sub-parameters will contribute to incomplete parameter for the particular clause.

In addition, the analysis for distribution of rights and obligation is determined by the number of rights and number of obligation of each contracting party in a clause. The interpretation of rights and obligation of a party is based on the keywords designed from literature. After sorting out the rights and obligation for each contracting party, the number of rights and the number of obligation in a clause is summed up to compute its minimum ratio that range from 0 to 1. Minimum ratio refers to the smaller value between two types of ratio, which is ratio of number of rights to number of obligation in a clause and vice versa.

Upon the completion of analysis of each attribute for every clause, a five-point Likert scale is used to evaluate the results. Since above calculation method obtained results range from 0 to 1, hence, results skewed to 0 shows the negativity of the attribute, while the results that skewed to 1 shows the positivity of the attribute, or vice versa. The developed evaluation framework is then applied on CIDB standard form to perform framework validation.

The developed standard form evaluation framework created evaluating system for contracting parties to identify the strengths and weaknesses of standard form in Malaysia. It is argued to have significant benefit to local construction industry practitioners; namely, in assisting contracting parties aware of their rights and obligation, and aware of the lacking conditions in standard form. Furthermore, the developed framework is argued to ensure the contracting parties take full objective account for future contract administration during construction that might result from potentially disruptive issues prone to arise from ambiguous, incomplete conditions and clauses.

Analysis with specific attributes with detailed parameters and measurement method in the framework allows the contracting parties to identify the specific parameters or sub-parameters that contribute the negative scores. Hence, precise solution to known problems can be made. Besides, the developed framework is designed to be user-friendly for contracting parties whereby the parameters and sub-parameters is clarified to ease the interpretation work while avoiding any doubt during form study. Furthermore, it involves only simple mathematics analysis calculation with a clear scores rating.

Nevertheless, limitations of the evaluation framework are identified during the framework validation. It is noted that the standard form must be read as a whole, clause by clause analysis might results negative rated clause if the information is separately provided in different clause. Hence, the results obtained is not an exact presentation but provide an estimation of the quality of the standard form. Other than that, parts of the contents in standard form is confusing due to the long, legalese sentences and misused terms, which affects the accuracy of the results. Moreover, the analysis for selected attributes did not fully cover all aspect and perspective such as involving complex grammar analysis, or comparing the distribution of rights for every party on certain issue.

Reviews from framework validation proved that the evaluation framework established by the research work has successfully evaluate the contents of standard form as intended by providing a number score with its rating. Generally, the results shown are very consistent with the reviews and other existing commentaries on the CIDB 2000 forms. The analysis shows that CIDB 2000 is a standard form with good clarity, as there is no clause that falls under unclear category. Besides, most of the clauses in CIDB 2000 is incomplete due to the lacking in provisions for contingencies adaptability. As for distribution of rights and

obligation, employer has a very good balanced distribution ratio, while in contrast, the contractor has an unbalanced distribution, and S.O. has a good balanced ratio distribution.

Despite few weakness of the framework, this research work has successfully developed and established a framework with sets of pre-determined attributes and parameters, alongside with a systematic and objective measurement procedure to analyse the local standard form. With a new, systematic, quantitative and objective framework, it is hoped that this study can bring improvements that are critical for Malaysian construction contracting.

6.3 Research Constraint and Suggestions for Future Research

The development of framework is limited to clarity, completeness and distribution of rights and obligation, since these are the major problems found in the existing standard form. However, it is inadequate to examine the standard form comprehensively. As compared to past literature, Bubshait and Almohawis (1994) in their study include eleven attribute to determine the idealness of a standard form, and Ting (2013) in her study include eight attributes to evaluate the standard form. Hence, it is recommended that further research be conducted with similar method of study using a quantitative measurement but involving more attributes and parameters, in order to examine the standard form in holistic approach.

Besides, the accuracy of the evaluation somehow dependant on the experience and knowledge of the evaluator, especially during the interpretation of the clauses. Clauses with long sentences, legalese language, and misused terms will contribute to misunderstanding the contents in standard form. Therefore, personal opinions cannot be completely eliminated. It is recommended to involve the experience expert or the drafter of standard form in the stage of developing parameters and analysis method. This recommendation is to overcome

the problems due to the complexity of language used in standard form and the difficulties during the interpretation of the standard form.

Furthermore, in-depth interviews with the experienced panels and professional bodies can be conducted to strengthen the framework by improving the parameters of attributes and involve more advanced mathematical formula. Other than that, the developed framework is advocated to be carried out by construction contract practitioners rather than the legal personnel who is unfamiliar with the nuances of issues in a construction project.

Besides, it is recommended to conduct the analysis with the aid of software programmes, so that more complex parameters can be included and results a more comprehensive and precise analysis. Moreover, it is recommended to involve some advanced mathematical formula in the framework to further highlights the relationship of the data. Also, it is suggested to examine the attribute in more aspect or in different perspective. The data obtained can be compared in different ways to identify the possible patterns and trends in the relationship of data.

It is also suggested to run the framework validation on few standard forms to discover the weakness that might not be found in a single test. Moreover, it is recommended that various governmental and professional bodies can use this evaluation framework to discover the lacking in existing forms and improve the standard form to the fulfilment of good standard form that suit the Malaysian construction industry.

6.4 Summary of Chapter

Based on the results and discussion obtained, it can be concluded that the aim and objectives for this research has been achieved. A theoretical and mathematical framework is established to evaluate the standard forms in Malaysia. The advantages and the weakness of the framework is identified from the framework validation using CIDB 2000. Discussion in Chapter 6 provides a specific guideline on how to improve the framework for intended purpose. Besides, numerical results obtained from CIDB 2000 by using the existing framework can serve as a basis in future revising of the standard form of contract.

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APPENDIX
EXAMPLE FOR FORM ANALYSIS
(CLAUSE 13)

FORM ANALYSIS - CLARITY

13	SITE ADMINISTRATION	Word Count	Cross references	Passive Voices	Negation Use	Wordiness, Cliché Jargon
13.1	Days and Hours of Working					
(a)	Unless otherwise stated elsewhere in the Contract, no work shall be carried out during the night or on Public Holidays without the written permission of the Superintending Officer except when such work is rendered unavoidable or necessary for the saving of life or property or for the safety of the Works, in which case the Contractor shall inform the Superintending Officer at the earliest possible opportunity of the same.	69	No	shall be carried; is rendered	Yes	No
(b)	When any such written permission is granted by the Superintending Officer pursuant to sub-clause 13.1(a), it shall be the Contractor's responsibility to comply with all the Statutory Requirements and shall bear all costs in compliance with the same.	38	Yes	is granted	No	No
(c)	For the purpose of this Clause 13.1, the term "night" shall mean the period from 7.00p.m. to 7.00a.m.	18	Yes	No	No	No
13.2	Contractor's Representative					
(a)	The Contractor shall appoint a competent person who shall be authorised to represent him (hereinafter referred to as the "Contractor's Representative") and shall notify the Employer and the Superintending Officer in writing the name of such person.	37	No	No	No	No
(b)	The Contractor's Representative shall be constantly on the Site during normal working hours and shall give his whole time to the supervision of the Works including the remedying of Defects after the Date of Practical Completion.	36	No	No	No	No
(c)	Any instructions or notices given to the Contractor's Representative by the Superintending Officer shall be deemed to have been given to the Contractor.	23	No	shall be deemed; have been given	No	No
(d)	The Superintending Officer may object to the appointment or request the removal of any person appointed or employed as the Contractor's Representative, provided always that the Superintending Officer shall not issue such notice of objection or removal unreasonably or vexatiously.	40	No	No	Yes	No
	Upon receipt from the Superintending Officer of a notice of objection or removal in writing, the Contractor shall forthwith remove him from the Site and shall not thereafter employ him again on the Site in any capacity and shall replace him by another Contractor's Representative approved by the Superintending Officer.	50	No	No	Yes	No
13.3	Removal of Workmen and Other Personnel					
(a)	The Contractor shall employ in and about the execution of the Works only such persons as are of good character, careful, skilled and experienced in their respective vocations and trades.	30	No	No	No	No

(b)	The Superintending Officer shall be at liberty to object to and require the Contractor to remove immediately from the Site any person employed by the Contractor in or about the execution of the Works who in the opinion of the Superintending Officer misconducts himself or is incompetent or negligent in the proper performance of his duties and whose continued presence is undesirable or unacceptable.	64	No	No	No	No
	Such person shall not again be employed upon the Works without the prior written permission of the Superintending Officer.	19	No	be employed	Yes	No
13.4	Access for Superintending Officer					
(a)	The Superintending Officer and any person authorised by the Superintending Officer shall at all reasonable times have access to the Works and to the factories, workshops or other places of the Contractor or of any sub-contractor or supplier where any Equipment, materials, goods or work are being manufactured, fabricated, assembled, prepared or stored for the Contract.	56	No	No	No	No
(b)	Where any such Equipment, materials, goods or work are being manufactured, fabricated, assembled, prepared or stored in the factories, workshops or other places of a sub-contractor or supplier, the Contractor shall by a term in the sub-contract secure a similar right of access to those factories, workshops or other places for the Superintending Officer and any person authorised by the Superintending Officer, and shall take reasonable steps required of him by the Superintending Officer to enforce or assist in enforcing such right.	82	No	No	No	No
		10	2	4	4	0

Clause 13 Total number of sentences: 13

Parameter	No. of sub-clauses	Ratio
Sentences with more than 25 words	10	0.77
Sentences with cross references	2	0.15
Sentences with passive voices	4	0.31
Sentences with negative style	4	0.31
Sentences with wordiness, cliché jargon	0	0.00
Average ratio		0.31

Quite Clear

FORM ANALYSIS – COMPLETENESS (TERM SPECIFICITY)

		Guidelines/ Procedures	Period/Cost	Rights	Obligations
13	SITE ADMINISTRATION				
13.1	Days and Hours of Working				
(a)	Unless otherwise stated elsewhere in the Contract, no work shall be carried out during the night or on Public Holidays without the written permission of the S.O. except when such work is rendered unavoidable or necessary for the saving of life or property or for the safety of the Works, in which case the Contractor shall inform the S.O. at the earliest possible opportunity of the same.	No work shall be carried out without the written permission of the S.O.	(Period) during the night or on Public Holidays	S.O.	Contractor
(b)	When any such written permission is granted by the S.O. pursuant to sub-clause 13.1(a), it shall be the Contractor's responsibility to comply with all the Statutory Requirements and shall bear all costs in compliance with the same.	-	-	-	Contractor Contractor
(c)	For the purpose of this Clause 13.1, the term "night" shall mean the period from 7.00p.m. to 7.00a.m.	The term "night" shall mean the period	(Period) from 7.00 p.m. to 7.00 a.m.	-	-
13.2	Contractor's Representative				
(a)	The Contractor shall appoint a competent person who shall be authorised to represent him (hereinafter referred to as the "Contractor's Representative") and shall notify the Employer and the S.O. in writing the name of such person.	Contractor shall appoint a C.R. and shall notify the Employer and the S.O. in writing the name of such person	-	-	Contractor Contractor
(b)	The Contractor's Representative shall be constantly on the Site during normal working hours and shall give his whole time to the supervision of the Works including the remedying of Defects after the Date of Practical Completion.	C.R. shall be constantly on the Site and shall give his whole time to the supervision of the Works	(Period) during normal working hours (Period) after the Date of Practical Completion	-	Contractor Contractor
(c)	Any instructions or notices given to the Contractor's Representative by the S.O. shall be deemed to have been given to the Contractor.	Any instructions or notices given to the C.R. by the S.O. shall be deemed to have been given to the Contractor	-	-	-
(d)	The S.O. may object to the appointment or request the removal of any person appointed or employed as the Contractor's Representative, provided always that the S.O. shall not issue such notice of objection or removal unreasonably or vexatiously. Upon receipt from the S.O. of a notice of objection	-	-	S.O.	Contractor

	or removal in writing, the Contractor shall forthwith remove him from the Site and shall not thereafter employ him again on the Site in any capacity and shall replace him by another Contractor's Representative approved by the S.O..				
13.3	Removal of Workmen and Other Personnel				
(a)	The Contractor shall employ in and about the execution of the Works only such persons as are of good character, careful, skilled and experienced in their respective vocations and trades.	Contractor shall employ in and about the execution of the Works only such persons with specified attitude	-	-	Contractor
(b)	The S.O. shall be at liberty to object to and require the Contractor to remove immediately from the Site any person employed by the Contractor in or about the execution of the Works who in the opinion of the S.O. misconducts himself or is incompetent or negligent in the proper performance of his duties and whose continued presence is undesirable or unacceptable. Such person shall not again be employed upon the Works without the prior written permission of the S.O..	-	-	S.O.	Contractor
13.4	Access for S.O.				
(a)	The S.O. and any person authorised by the S.O. shall at all reasonable times have access to the Works and to the factories, workshops or other places of the Contractor or of any sub-contractor or supplier where any Equipment, materials, goods or work are being manufactured, fabricated, assembled, prepared or stored for the Contract.	S.O. and any person authorised by S.O. shall have access to specified places where things are being ready.	-	S.O. Person authorised by S.O.	-
(b)	Where any such Equipment, materials, goods or work are being manufactured, fabricated, assembled, prepared or stored in the factories, workshops or other places of a sub-contractor or supplier, the Contractor shall by a term in the sub-contract secure a similar right of access to those factories, workshops or other places for the S.O. and any person authorised by the S.O., and shall take reasonable steps required of him by the S.O. to enforce or assist in enforcing such right.	-	-	-	Contractor Contractor

FORM ANALYSIS – COMPLETENESS (CONTINGENCIES ADAPTABILITY)

		Guidelines/ Procedures	Period/Cost	Alternative Solution
13	SITE ADMINISTRATION			
13.1	Days and Hours of Working			
(a)	Unless otherwise stated elsewhere in the Contract, no work shall be carried out during the night or on Public Holidays without the written permission of the S.O. except when such work is rendered unavoidable or necessary for the saving of life or property or for the safety of the Works, in which case the Contractor shall inform the S.O. at the earliest possible opportunity of the same.	Except when such work is rendered unavoidable or necessary for specified reason, Contractor shall inform the S.O. at the earliest possible opportunity of the same	(Period) earliest possible	S.O.
(b)	When any such written permission is granted by the S.O. pursuant to sub-clause 13.1(a), it shall be the Contractor's responsibility to comply with all the Statutory Requirements and shall bear all costs in compliance with the same.	When any such written permission is granted by S.O., it shall be the Contractor's responsibility to comply with all the Statutory Requirements and shall bear all costs in compliance with the same	(Cost) Contractor bear all costs	-
(c)	For the purpose of this Clause 13.1, the term "night" shall mean the period from 7.00p.m. to 7.00a.m.	-	-	-
13.2	Contractor's Representative			
(a)	The Contractor shall appoint a competent person who shall be authorised to represent him (hereinafter referred to as the "Contractor's Representative") and shall notify the Employer and the S.O. in writing the name of such person.	-	-	-
(b)	The Contractor's Representative shall be constantly on the Site during normal working hours and shall give his whole time to the supervision of the Works including the remedying of Defects after the Date of Practical Completion.	-	-	-
(c)	Any instructions or notices given to the Contractor's Representative by the S.O. shall be deemed to have been given to the Contractor.	-	-	-
(d)	The S.O. may object to the appointment or request the removal of any person appointed or employed as the Contractor's Representative, provided always that the S.O. shall not issue such notice of objection or removal unreasonably or vexatiously. Upon receipt from the S.O. of a notice of objection or removal in writing, the Contractor shall forthwith remove him from the Site and shall not thereafter employ him again on the Site in any capacity and shall replace him by another Contractor's Representative approved by the S.O..	The S.O. may object to the appointment or request the removal of any person appointed or employed as the Contractor's Representative, provided always that the S.O. shall not issue such notice of objection or removal unreasonably or vexatiously. Contractor shall forthwith remove him from the Site and shall not thereafter employ him again on the Site in	(Period) Upon receipt from the S.O. of a notice of objection or removal in writing ** No extra time given	-

		any capacity and shall replace him by another Contractor's Representative approved by S.O..		
13.3	Removal of Workmen and Other Personnel			
(a)	The Contractor shall employ in and about the execution of the Works only such persons as are of good character, careful, skilled and experienced in their respective vocations and trades.	Contractor shall employ in and about the execution of the Works only such persons with specified attitude	-	-
(b)	The S.O. shall be at liberty to object to and require the Contractor to remove immediately from the Site any person employed by the Contractor in or about the execution of the Works who in the opinion of the S.O. misconducts himself or is incompetent or negligent in the proper performance of his duties and whose continued presence is undesirable or unacceptable. Such person shall not again be employed upon the Works without the prior written permission of the S.O..	-	-	-
13.4	Access for S.O.			
(a)	The S.O. and any person authorised by the S.O. shall at all reasonable times have access to the Works and to the factories, workshops or other places of the Contractor or of any sub-contractor or supplier where any Equipment, materials, goods or work are being manufactured, fabricated, assembled, prepared or stored for the Contract.	-	-	-
(b)	Where any such Equipment, materials, goods or work are being manufactured, fabricated, assembled, prepared or stored in the factories, workshops or other places of a sub-contractor or supplier, the Contractor shall by a term in the sub-contract secure a similar right of access to those factories, workshops or other places for the S.O. and any person authorised by the S.O., and shall take reasonable steps required of him by the S.O. to enforce or assist in enforcing such right.	Where any such things are being ready in the places, Contractor shall by a term in the sub-contract secure a similar right of access to those places for the S.O. and any person authorised by the S.O., and shall take reasonable steps required of him by S.O. to enforce or assist in enforcing such right	-	-

FORM ANALYSIS – COMPLETENESS (CONTRACTUAL OBLIGATORINESS)

		Applicable Law	Penalization	Protection
13	SITE ADMINISTRATION			
13.1	Days and Hours of Working			
(a)	Unless otherwise stated elsewhere in the Contract, no work shall be carried out during the night or on Public Holidays without the written permission of the S.O. except when such work is rendered unavoidable or necessary for the saving of life or property or for the safety of the Works, in which case the Contractor shall inform the S.O. at the earliest possible opportunity of the same.		*** Not provided for those who work overtime without written permission	
(b)	When any such written permission is granted by the S.O. pursuant to sub-clause 13.1(a), it shall be the Contractor's responsibility to comply with all the Statutory Requirements and shall bear all costs in compliance with the same.			
(c)	For the purpose of this Clause 13.1, the term "night" shall mean the period from 7.00p.m. to 7.00a.m.			
13.2	Contractor's Representative			
(a)	The Contractor shall appoint a competent person who shall be authorised to represent him (hereinafter referred to as the "Contractor's Representative") and shall notify the Employer and the S.O. in writing the name of such person.			
(b)	The Contractor's Representative shall be constantly on the Site during normal working hours and shall give his whole time to the supervision of the Works including the remedying of Defects after the Date of Practical Completion.			
(c)	Any instructions or notices given to the Contractor's Representative by the S.O. shall be deemed to have been given to the Contractor.			S.O.
(d)	The S.O. may object to the appointment or request the removal of any person appointed or employed as the Contractor's Representative, provided always that the S.O. shall not issue such notice of objection or removal unreasonably or vexatiously. Upon receipt from the S.O. of a notice of objection or removal in writing, the Contractor shall forthwith remove him from the Site and shall not thereafter employ him again on the Site in any capacity and shall replace him by another Contractor's Representative approved by the S.O..			Contractor S.O.
13.3	Removal of Workmen and Other Personnel			
(a)	The Contractor shall employ in and about the execution of the Works only such persons as are of good character, careful, skilled and experienced in their respective vocations and trades.			
(b)	The S.O. shall be at liberty to object to and require the Contractor to remove immediately from the Site any person employed by the Contractor in or about the execution of the Works who in the opinion of the S.O. misconducts himself or is incompetent or negligent in the proper performance of his duties and whose continued presence is undesirable or	***Labour Law is not provided		S.O.

	unacceptable. Such person shall not again be employed upon the Works without the prior written permission of the S.O..			
13.4	Access for S.O.			
(a)	The S.O. and any person authorised by the S.O. shall at all reasonable times have access to the Works and to the factories, workshops or other places of the Contractor or of any sub-contractor or supplier where any Equipment, materials, goods or work are being manufactured, fabricated, assembled, prepared or stored for the Contract.			
(b)	Where any such Equipment, materials, goods or work are being manufactured, fabricated, assembled, prepared or stored in the factories, workshops or other places of a sub-contractor or supplier, the Contractor shall by a term in the sub-contract secure a similar right of access to those factories, workshops or other places for the S.O. and any person authorised by the S.O., and shall take reasonable steps required of him by the S.O. to enforce or assist in enforcing such right.			S.O.

	Term Specificity				Contingencies Adaptability			Contractual Obligatoriness		
	Procedure/ Guidelines	Period/ Cost/ Quantity	Rights	Obligations	Procedure/ Guidelines	Period/ Cost/ Quantity	Alternative Solution	Applicable Law	Penalization	Protection
13.1 (a)	Yes	-	Yes	Yes	Yes	-	-	-	No	-
13.1 (b)	-	-	-	Yes	Yes	-	-	-	-	-
13.1 (c)	Yes	-	-		-	-	-	-	-	-
13.2 (a)	Yes	-	-	Yes	-	-	-	-	-	-
13.2 (b)	Yes	Yes	-	Yes	-	-	-	-	-	-
13.2 (c)	Yes	-	-	-	-	-	-	-	-	Yes
13.2 (d)	Yes	Yes	Yes	Yes	Yes	-	-	-	-	Yes
13.3 (a)	Yes			Yes	-	-	-	-	-	-
13.3 (b)	-	-	Yes	Yes	No	No		No	-	Yes
13.4 (a)	Yes	-	Yes	-	-	-	-	-	-	-
13.4 (b)	-	-	-	Yes	Yes	-	-	-	-	Yes
	Complete	Complete	Complete	Complete	Incomplete	Incomplete	Not Applicable	Incomplete	Incomplete	Complete

FORM ANALYSIS – DISTRIBUTION OF RIGHTS AND OBLIGATION

1. Employer's Rights and Obligations

Sub-clause	Rights	Total
-	NIL	0
Sub-clause	Obligations	
-	NIL	0
		0, 0

2. Contractor's Rights and Obligations

Sub-clause	Rights	Total
-	NIL	0
Sub-clause	Obligations	
13.1 (a)	Shall inform the S.O. at the earliest possible opportunity of the same when such work is rendered unavoidable or necessary for the saving of life or property or for the safety of the Works.	1
13.1 (b)	Shall comply with all the Statutory Requirements when any such written permission is granted by the Superintending Officer pursuant to sub-clause 13.1(a).	1
13.1 (b)	Shall bear all costs in compliance with the same when any such written permission is granted by the Superintending Officer pursuant to sub-clause 13.1(a).	1
13.2 (a)	Shall appoint a competent person who shall be authorised to represent him	1
13.2 (a)	Shall notify the Employer and the S.O. in writing the name of such person.	1
13.2 (d)	Shall forthwith remove Contractor's Representative from the Site and shall not thereafter employ him again on the Site in any capacity upon receipt from the S.O. of a notice of objection or removal in writing	1
13.2 (d)	Shall replace him by another Contractor's Representative approved by the S.O.	1

13.3 (a)	Shall employ in and about the execution of the Works only such persons as are of good character, careful, skilled and experienced in their vocations and trades.	1
13.4 (b)	Shall by a term in the sub-contract secure a similar right of access to those factories, workshops or other places for the Superintending Officer and any person authorised by the Superintending Officer	1
13.4 (b)	Shall take reasonable steps required of him by the Superintending Officer to enforce or assist in enforcing such right where any such Equipment, materials, goods or work are being manufactured, fabricated, assembled, prepared or stored in the factories, workshops or other places of a sub-contractor or supplier, the Contractor.	1
		<u>0, 10</u>

3. S.O.'s Rights and Obligations

Sub-clause	Rights	Total
13.1 (a)	Has a right to issue written permission to carry out work during the night or on Public Holidays.	1
13.2 (d)	May object to the appointment or request the removal of any person appointed or employed as the Contractor's Representative, provided always that the Superintending Officer shall not issue such notice of objection or removal unreasonably or vexatiously.	1
13.3 (b)	Shall be at liberty to object to and require the Contractor to remove immediately from the Site any person employed by the Contractor in or about the execution of the Works who in the opinion of the S.O. misconducts himself or is incompetent or negligent in the proper performance of his duties and whose continued presence is undesirable or unacceptable. Such person shall not again be employed upon the Works without the prior written permission of the S.O.	1
13.4 (a)	Shall at all reasonable times have access to the Works and to the factories, workshops or other places of the Contractor or of any sub-contractor or supplier where any Equipment, materials, goods or work are being manufactured, fabricated, assembled, prepared or stored for the Contract	1
Sub-clause	Obligations	
-	NIL	0
		<u>4, 0</u>